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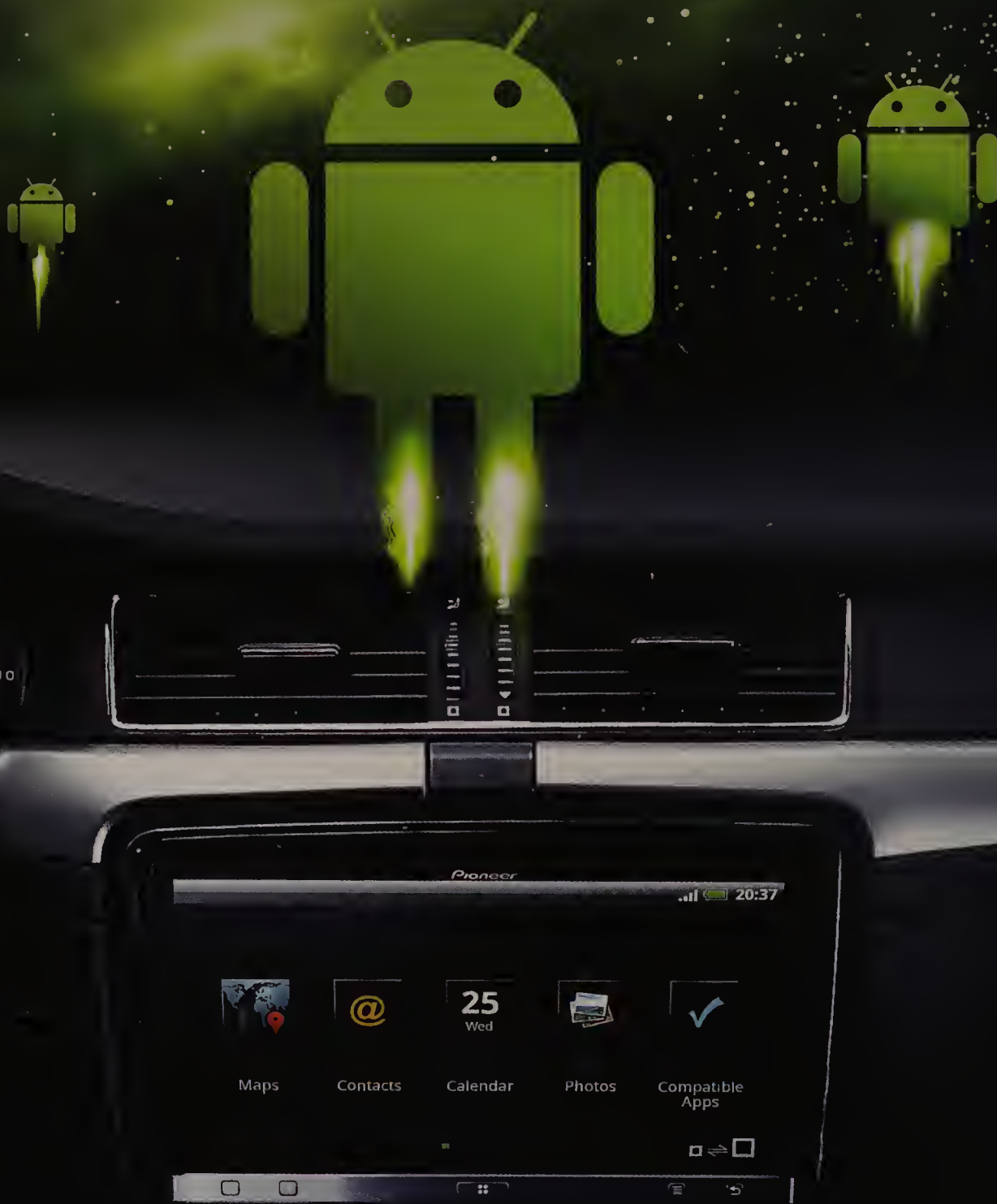
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Smarter technology for a Smarter Planet:

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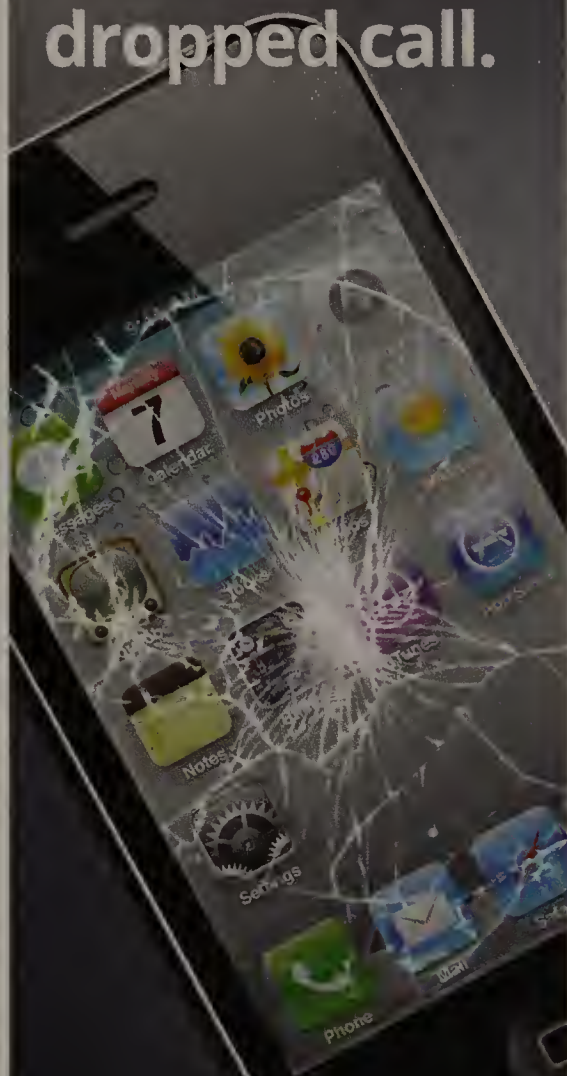
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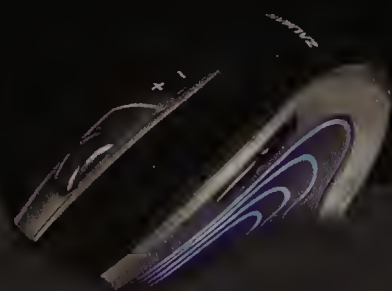
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Editor's Letter



STEVE FOX

Microsoft Takes On the Ad Industry

IT'S A CLASSIC physics question: What happens when an unstoppable force meets an immovable object? In this case, the unstoppable force is the online advertising industry, which earns its bread by tracking consumers' click-by-click behavior and using that data to display targeted ads. The immovable object is Microsoft, whose upcoming Internet Explorer 10 browser in Windows 8 makes tracking an option, not the default.

Tracking is the latest battlefield in the privacy wars. (See Mark Sullivan's sobering "Data Snatchers! The Booming Market for Your Online Identity" on page 77 for details on how your personal data is collected, shared, and sold.) In fact, tracking has be-

come so troubling that the Obama administration ordered the ad industry to devise a plan to protect consumers.

The Digital Advertising Alliance, an industry coalition, responded by supporting the Do Not Track initiative. DNT stipulates that if a website detects a "do not track" indicator during a browsing session, it won't show personalized, targeted ads in that user's browser. Instead, it will display generic "run-of-site" ads. Run-of-site ads are less invasive, but they are also less effective and yield less revenue for the site.

Two key provisions of the DAA plan: First, the DNT "flag" is off by default, so users must turn the feature on in their browsers to stop targeted ads. Second, honoring a DNT request is voluntary.

Do Not Track had its coming-out party

Internet Explorer 10 won't track user behavior by default. Advertisers say this could destroy the online ad business.

in February at a White House event, where DAA members pledged to abide by the new DNT flag. That "Kumbaya" moment held until June, when Microsoft announced that IE 10 would ship with DNT turned *on* by default—users would have to consciously change the

ine if Microsoft started printing coupons for its users that said, "60 percent off all Walmart items in Walmart stores." Walmart wouldn't honor those coupons, just as "publishers won't honor Microsoft's DNT flags, because they're a catastrophe for the ad industry."

Microsoft, naturally, has a different take on the issue, touting the importance of consumer privacy and noting that DNT is still a work in progress.

How will this play out? I envision five scenarios.

1. Advertisers refuse to honor IE 10's DNT flag; the DNT initiative collapses.

2. Advertisers don't honor Microsoft's DNT flag, but public outcry leads to a PR disaster. The IAB, *et al.*, reverse their decision.

3. Microsoft backs down and ships IE 10 with DNT turned off.

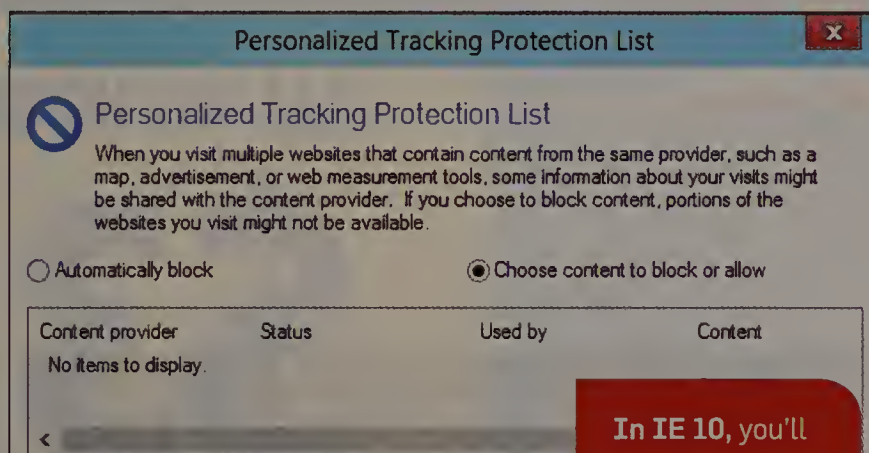
4. Advertisers agree to honor all DNT flags, even from IE 10. Advertisers shift their focus to enticing consumers to opt in to tracking, through on-page offers.

5. Europe mandates that DNT be on by default. The U.S. follows suit.

So here we are, caught in a stand-off. We want privacy, but we also want all the free content that ad dollars support.

Do we root for the unstoppable force or the immovable object? Stay tuned. Physicists are standing by. ●

Steve Fox is editorial director of PCWorld.



In IE 10, you'll need to change your default setting if you want targeted ads.

setting in IE 10 in order to see targeted ads.

Cue the howling. The IAB (the trade association representing online advertisers) accused Microsoft of violating the agreed-upon DNT standard, thereby threatening the livelihood of websites and advertisers. After all, advertising effectively pays for all that "free" content we see online.

Here's how Mike Zaneis, IAB's senior VP, explained the economics to me: Websites charge roughly 2.5 times as much money to display a relevant, targeted ad as they do for an untargeted ad. By making untargeted ads the default, "Microsoft is telling advertisers, 'You cannot sell the more expensive ads from our browser.'" Zaneis adds, "Imag-

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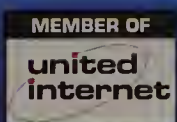
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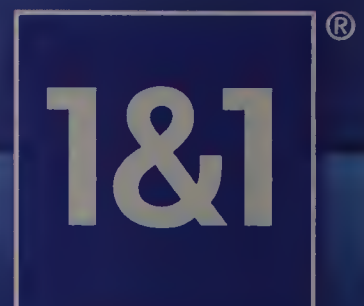
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Readers comment this month on June's round-up of no-cost antivirus programs, on "Wireless Speed Showdown: Which Network Is Fastest?" and on the recent LinkedIn password breach (for what you need to know on that development, and on staying safe, go to find.pcworld.com/73047).



Free Antivirus

I turned with interest to "Free Antivirus You Can Trust" (June). But I was startled to note that your reviewer tested Microsoft Security Essentials 2.1. Good heavens! The version installed on my machine is numbered 4.0.

Dennis Davis, Tucson, Arizona

Author's reply: Version 4.0 of Microsoft Security Essentials came out the day after our reviews were completed—one of the hazards of covering products that get updated from time to time.

—Nick Mediati

No one antivirus product—free or paid—protects against all viruses/malware/spam/phishing/zero-day threats. Period. To think that there is a magic-shield app that will keep you safe, warm, and protected is unwise.

As the article shows, all of the products have their varying strengths and weaknesses. Multilayer protection is a necessity for *all* Windows PC users.

My2w0S3n5e, PCWorld.com forums

In the case of vendors that provide both free and paid antivirus, many use the same engine for both their free and their paid versions, with the differences being mainly in the administrative features and the level of support.

deepsand, PCWorld.com forums

A Huge Password Breach

Regarding the online story "Update: LinkedIn Confirms Account Passwords Hacked" (find.pcworld.com/73045): Not only should people change their passwords, but also they *must* get in the habit of not using one

password for all accounts. This is akin to considering, as a safety mechanism, having one key that opens all your locks. If I get that one key, your house, car, safety deposit box...insert anything important here...becomes mine. It is

not difficult to create variations of the same password, but they must be different, so that rather than losing your entire body, you might lose just a finger.

RoyceBennett, PCWorld.com forums

Use a service like LastPass, and you have to remember only one password.

RichShowalter, PCWorld.com forums

Wireless Speed Showdown

AT&T's LTE network is fairly new, so I would think that the type of testing you performed [for June's "Wireless Speed Showdown: Which Network Is Fastest?"] would be more accurate a couple of years out, when the company's network has more traffic on it.

analyzethis, PCWorld.com forums

I think this story is pretty spot-on. I dumped Sprint last year around October, and switched to AT&T. I found that my 3G signal was giving me faster data rates than the spotty and constantly

cycling WiMax signal that Sprint provided.

Carlos1hto

PCWorld.com forums

An Affordable 4G Plan?

Regarding the June *Editor's Letter*, "Can You Afford Your 4G Data Plan?": At first glance, one would

think that opting for the fastest 4G service with download limits instead of for unlimited 4G at a slower speed could make sense. But as a Clearwire (Sprint) user for years, I would rather have a slower 4G that works great and



never gets throttled than a cap on the fast 4G that cuts me back to dial-up speed when I hit the monthly limit. I find that the service has only gotten better over time. I can stream whatever I want with few or no issues.

Gordon Gipson, Lake Tapps, Washington

Best Free Stuff

Regarding "Best Free Stuff" (June): In my opinion, the best free software programs for people who actually like to be productive are (in alphabetical order) these products: Audacity, Blender/Art of Illusion, Clementine, Comodo Free Internet Security, Filezilla, Firefox, Gimp, LibreOffice, Notepad+, Picasa 3, 7-Zip, and Thunderbird. Just google them. You won't be disappointed.

Fatesrider, PCWorld.com forums

Ebook Publishing

"How to Publish an Ebook, Step by Step" [*Business Center*, June] was a decent summary of what's necessary, but Christopher Null misses the boat when he suggests hiring someone to do the job [of formatting] for you. As the author of many books, most of which have been recently republished in digital format, I can tell you that it's easy to do this yourself. Both Amazon and

Barnes & Noble give clear instructions, and have software that translates files into their required formats.

Jonnie Jacobs, Piedmont, California

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CORRECTIONS

IN JULY'S "FILL Your Mobile Security Toolbox" (*Security Alert*), we should have noted that mSecure Password Manager does not support syncing your passwords across BlackBerry and Symbian. (For more about mSecure, see page 72.)

Update: July's "Remote-Control Tech Support" (*Business Center*) described the HiWired Direct service; but Radialpoint, HiWired's parent company, has shuttered the HiWired website and will provide support only to legacy customers.

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Forward



Do Flexible Displays Have a Future?

BY GINNY MIES

ENGINEERS HAVE BEEN working on developing flexible displays for years. But until this year, we've only seen prototypes of bendable screens. In 2008, HP and the Flexible Display Center at Arizona State University unveiled a prototype of an affordable, flexible electronic display that used self-aligned imprint lithography technology. The paperlike

Will bendy displays prove to be useful as well as cool, or will they suffer the fate of impractical glasses-free 3D displays?

computer displays are made almost entirely of plastic, which makes them durable, movable, and portable. And in 2010, Taiwan's Industrial Technology Research Institute and AU Optronics teamed up to develop a manufacturing process for flexible e-reader displays using AMOLED technology.

Then last fall, Nokia showed off a working prototype of a kinetic device that had a flexible OLED display. To interact with it, you had to hold the gadget in both hands, which allowed you to flex and bend it to achieve certain results—bending the display inward to zoom in on photos in a gallery app, for

example, or bending it outward to zoom out. The music app lets you twist up or down to go through albums. To play a song, you would bow the display in. Cool? Definitely. Practical? It is hard to say. It might be good for gaming, but since you must use two hands to operate it, it seems impractical to employ in phones.

This year, Samsung announced that it had started shipping its flexible, »

OLED-based Youm displays, which have a standard OLED design, but with the glass substrate and encapsulation layers replaced by flexible polymer sheets.

LG is mass-producing flexible displays, too, but they are e-ink displays designed for use in e-readers. The e-ink displays measure 6 inches diagonally with a 1024-by-768-pixel resolution. Like Samsung's display, LG's e-ink display is made from plastic and has no glass sheets protecting it.

Atmel, the company behind touch sensor technology for tablets and mobile phones, launched a new touch sensor product called XSense, which is made from flexible film and can wrap around curved surfaces. Atmel's XSense touch sensors are shipping now, with finished products scheduled

to be available starting sometime in the third quarter of this year.

Advantages of Flexible Displays

A display that bends and moves has many potential advantages. The Youm displays promise to be thinner and lighter, simply because they have fewer layers than the LCD and OLED displays that we see on current phones and tablets. An LCD display typically has six layers, two of which are glass, while an OLED panel has four, with two glass panels.

In addition, flexible displays may be more durable than today's phone and tablet displays, since they don't

use glass. Samsung claims that its screens are "unbreakable," but I'll take that claim with a grain of salt until *PCWorld* has a chance to test the displays in-house.

Another potential use for flexible displays is in "wearable" designs that manufacturers can create. For example, the Nokia Morph, a concept device, is a wearable watch/phone hybrid constructed out of fibril proteins that have been woven into a three-dimensional mesh, so the whole phone—including its screen—can move and bend.

Challenges Ahead

The displays coming up this year will be less flexible than you might expect, but you can look for e-readers made with flexible e-paper displays, as well as a few phones by the end of this year, and next year possibly tablets equipped with Samsung's AMOLED displays.

Phone manufacturers have a big challenge ahead of them. They must find a way

to make flexible displays useful rather than just relying on the "cool factor" of simply bending. Glasses-free 3D displays on phones and tablets were heralded as being cool and futuristic, but ultimately consumers had little use for a 4.3-inch 3D screen. Samsung's Youm display is lightweight and more durable than a non-bendy OLED display. The fact that it is also flexible is just a secondary feature.

Being able to bend and move a display by itself doesn't confer built-in appeal; manufacturers must find other ways—beyond light weight and toughness—to make flexible displays attractive and useful. Nokia's kinetic prototype offers an interesting glimpse at how a flexible display might be used, but it still seems a bit impractical. Manufacturers will also have to consider the wear and tear that the gadget must endure. A few thousand flexes on a display could do serious damage to its components.



The Nokia Morph uses flexible materials and transparent electronics.



Atmel's tablet and smartphone concept devices.

PHOTOGRAPHS: (TOP) COURTESY OF NOKIA; (BOTTOM) COURTESY OF ATMEL

iOS 6: Cool New Features But Same Old iPhone

APPLE'S iOS 6 will continue to leapfrog with the competition, adding long-requested features as well as new surprises. But if you were hoping for big changes to the iPhone's operating system, you'll have to keep waiting.

An iPhone with iOS 6 is still essentially a launcher for apps and services. It looks as dependable as ever, but it's getting kind of dull.

Admittedly, apps and services will get better in iOS 6. Maps will improve with turn-by-turn navigation. Mail will finally allow photo and video attachments. A "Do Not Disturb" mode will enhance notifications. Facetime will gain support for cellular networks and be able to answer phone calls as video chats. A new service called Passbook will let people store tickets, passes, gift cards, and other documents in digital form.

Yet apps on the iPhone's static list still won't be able to talk to one another.

Android, Windows Phone, and Windows 8 apps can accomplish more. With widgets and live tiles, they can show information on the home screen beyond simple notification badges. Users can check the weather or glance at headlines without diving into an app or consulting Siri.

With "intents" in Android and "contracts" in Windows 8, apps can also pass data back and forth, even if they don't know about each other specifically. So while the iPhone can share information on Facebook and Twitter, other operating systems share the same data to other networks, reading lists, and online storage services.

I would love to see Apple help apps function on a higher level than they will in iOS 6. An API for Siri would have been a good start, and some form of customization for the OS's Notification Center would have been nice, too.

—Jared Newman



iOS 6's new Passbook service can store commercial documents.

BRIEFS

Chrome OS Update Adds Traditional Desktop Feel

The latest version of Google's Chrome OS adds a traditional desktop look to Chromebooks, including features that will be familiar to any PC user. Instead of having a single monolithic browser window with an endless number of tabs, Chrome OS has a new window manager that lets you open multiple windows at once. You can also snap a window to each side of the screen to view two separate windows at once, much as with the Aero Snap feature in Windows 7.



Win 8: MS Tries to Rein In Unwanted Software

To combat bloatware, Microsoft plans to offer Windows 8 users a \$99 Signature Upgrade service—an extension of the Microsoft Store's Signature PC program that tweaks Windows 7 PCs for speed and performance, and removes bloatware. Microsoft says a Signature PC can go to sleep 23.1 percent faster, start up 39.6 percent faster, and resume 51.3 percent sooner than a regular PC.

50K Free Wi-Fi Hotspots for Cable Subscribers

Bright House Networks, Cablevision, Comcast, Cox Communications, and Time Warner Cable will make more than 50,000 free hotspots available to each company's cable customers. The new free "CableWiFi" Wi-Fi hotspots will be available in Los Angeles, New York City and its environs, Orlando, Philadelphia, and Tampa.



Malware Threat Level Reaches Four-Year High

Malware circulating in cyberspace has reached a four-year high, and is on a pace to reach 100 million samples by year's end, cybersecurity vendor McAfee said in its May threats report. New kits for creating malicious software have contributed to the recent proliferation of malware, as crackdowns on botnets built on Zeus and SpyEye packages have prodded cybercriminals to seek alternative tools.

How Comcast's Caps Affect Bandwidth Usage

COMCAST HAS dropped its 250GB monthly bandwidth limit for all but a few of its cable subscribers. The company plans to test the effect of higher included bandwidth limits (with a maximum of at least 300GB) in combination with overage fees of \$10 per 50GB block—20 cents per gigabyte—beyond such caps.

When Comcast finishes its testing and installs its new limits, how will it affect you?

If you have a television-plus-Internet bundle, Comcast doesn't (and won't) count any of the Xfinity cable TV video that it transmits through its television set-top box against data quotas. But Comcast does split out video

delivered in other ways. Subscribers to Comcast's Xfinity Streampix can watch TV series and movies via a Web browser or an iOS app, and watch on-demand content via a separate subscription; but on your home network, it counts against your cap.

Streaming complicates the equation. A 5-mbps data stream consumes 2.25GB per hour, which still allows a hefty 133 hours a month of viewing under a 300GB cap; that total works out to a little more than 4 hours per day over a 31-day month. But 4 hours per day for a single person isn't the same as 4 hours per day for an entire household with a shared



connection. In the latter case, just 65 minutes of streaming each day by each member of a four-person household bumps the total past 300GB.

Gaming is rarely an issue, as even serious gamers won't use more than a few gigabytes a month in regular play. Downloading (and uploading) torrents, however, can quickly eat up a month's

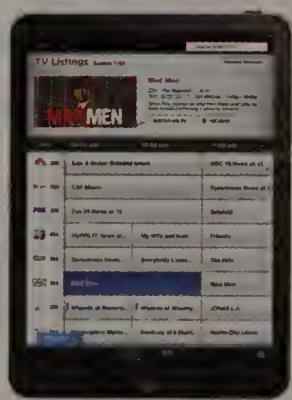
allotment of bandwidth.

You may also run afoul of caps if you shoot lots of video or use a high-megapixel camera, store files in RAW format and back up to a photo-sharing service or a hosted backup system.

—Glenn Fleishman

ILLUSTRATION: ALEX EBEN MEYER

TECH SPOTLIGHT: TV REMOTES ON STEROIDS



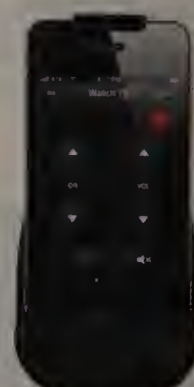
XFINITY iPad APP Comcast's free Xfinity TV app lets subscribers use an iOS or Android device to change channels, browse TV and OnDemand listings, and even view some content on their mobile device. Comcast's X1 app adds gesture-based controls. find.pcworld.com/73082



LOGITECH HARMONY 1100 ADVANCED UNIVERSAL REMOTE The \$350 Harmony 1100 has a 3.5-inch screen with a backlight, for viewing in the dark. It comes with IR and RF technology, connects to Windows and Mac PCs, and works with up to 15 gadgets. find.pcworld.com/73083



TRC-1280 HANDHELD VIDEO COLOR TOUCHSCREEN REMOTE The \$899 Wi-Fi-based TRC-1280 can control TV and home-entertainment devices, lighting, temperature, and A/V gear. Its 2.8-inch touchscreen displays images from security cameras. find.pcworld.com/73084

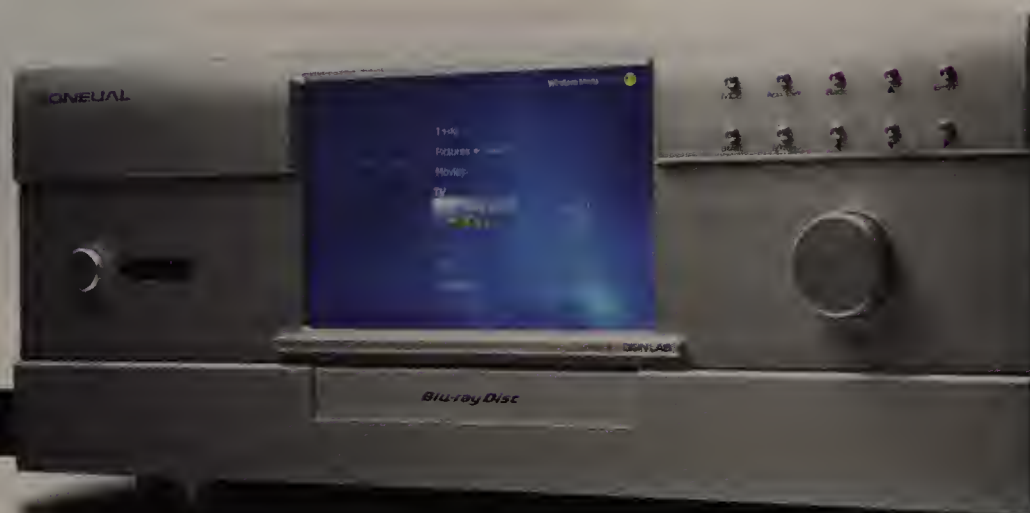


VOOMOTE ONE The \$70 VooMote One is a small dongle that plugs into any iOS device, working with VooMote's free Zapper app to transform your iOS device into a universal remote. You also can customize the remote to do different jobs in different rooms. find.pcworld.com/73085

HTPC

Sophisticated Creation

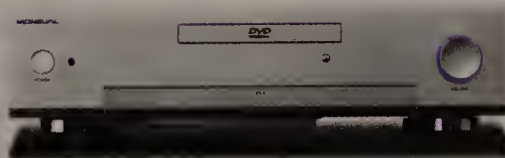
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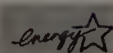
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What's Next for Windows Phone?

RECENT SALES numbers for Windows Phone 7 aren't looking good. According to the NPD Group, Windows Phone represented 2 percent of new smartphone sales in the United States during the first quarter of 2012. Nielsen reported still worse numbers for Windows Phone: a 1.7 percent market share among U.S. smartphone owners in the first quarter. Even Windows Mobile, Microsoft's older mobile platform, has a 4.1 percent market share. Yikes.

I praised Microsoft's revamped mobile platform when it launched at Mobile World Congress in 2010. I was also quite enthusiastic about the Windows Phone 7.5 update, also known as "Mango." But over the past year, I've become less confident that the platform will ever become a strong competitor to Android and iOS.

With Windows 8 on the horizon, what's next for Windows Phone? Is the party

over already, or will Microsoft's latest mobile operating system finally start to catch on with consumers?

Tango Update

The next update to Windows Phone, Tango, is due in the next month or two. Though Microsoft hasn't confirmed the timing or the additional features, WPCentral.com got its hands on a Tango phone. The update's new features include the ability to text multiple images, the ability to forward calls, and (finally!) the ability to use the device as a hotspot.

Tango is also optimized to run on 800MHz processors. Previously, Windows Phone would run only on phones with a 1GHz or 1.4GHz Snapdragon processor. This development means that Windows Phone can now run on inexpensive phones, which is both a blessing and a curse for the platform. Microsoft will be able to expand the platform's reach, especially



Nokia's Lumia 900 (Windows Phone 7).

in China and India. However, Tango still doesn't support dual-core processors.

What's after Tango? Microsoft hasn't officially said anything, but multiple sources have confirmed that Windows Phone 8, nicknamed "Apollo," will not be the same as Microsoft's tablet OS, Windows RT. There's also some confusion as to whether existing Windows Phones, such as Nokia's Lumia 900, will support upgrades to Windows Phone 8. Microsoft has said only that the next major revision of

Windows Phone will continue to support the apps made for Windows Phone 7.

In a perfect world, all Windows Phones would be upgradable to Windows Phone 8; Windows 8 tablets and phones would run the same OS; and all Windows Phone devices would be able to use all Windows apps. Unfortunately, this seems less likely as pressures toward fragmentation increase, leaving Windows Phone's future as a serious mobile competitor very much in doubt.

—Ginny Mies

Employers to Increase Monitoring of Social Media Use?

CORPORATIONS are embracing technologies used to monitor employee Internet use, with perhaps 60 percent watching workers' social media use for security breaches by 2015, according to a new report from Gartner.

Today less than 10 percent of companies monitor their employees' use of Facebook,

LinkedIn, YouTube, and other social media sites for security breaches, though many monitor social media for brand management and marketing, the report says.

New technologies and services permit expanded employee monitoring—but companies must closely manage their monitoring

efforts for ethical and legal issues, the report warned.

Companies considering new monitoring programs must comply with the laws of every country they operate in, the report notes. And if companies want to monitor employee social media activity on employee-owned devices, they will need to get

the workers' permission.

Security staff should get permission from the company executives before monitoring, the report added. "Surveillance is an unusual activity that requires specialized capabilities and clear authority from senior management," it concluded.

—Grant Gross



Fedora Linux 17: An Update With Muscle

IN LATE MAY, Fedora Linux 17—a free, open-source operating system also known as “Beefy Miracle”—arrived.

Among Fedora 17's desktop features are GNOME 3.4 (which has new search capabilities and improved themes, among other enhancements) and GIMP 2.8 (notable for its long-awaited introduction of single-window mode).

Other features of Fedora 17 include an updated OpenStack cloud platform, the open virtualization platform oVirt, JBoss Application Server 7, a prerelease edition of the Juno Eclipse SDK, and Java 7 for developers.

A full list of Fedora 17's new features (find.pcworld.com/73069), and the free download itself (find.pcworld.com/73070), are available at the project's website.

One interesting new feature for small businesses is automatic multiseat, which enables retail shops to offer customers guest PC use without having to invest in a second computer.

—Katherine Noyes

GEEKTECH

Noteworthy Alternatives to Arduino

THE ARDUINO MICROCONTROLLER can help you develop some awesome projects involving robotics, home automation, and the like. A huge community of Arduino users exists, and they've assembled tons of tutorials and code examples that are easy to modify and learn from (see find.pcworld.com/73064 for a brief overview).

But other options may be as good as Arduino to work with, depending on your situation.

BeagleBone: This microcontroller from Texas Instruments (\$89, beagleboard.org/bone) has a powerful processor, an ethernet port built into the board, and a MicroSD card slot. These features make connecting to and programming the BeagleBone via USB or over your network a breeze. The included 4GB MicroSD card comes with the Angstrom Distribution of Linux (find.pcworld.com/73065) preinstalled, so your PC can recognize it as an external drive.

Teensy/Teensy++: As their names suggest, the Teensy (\$20, find.pcworld.com/73066) and the Teensy++ (\$28, find.pcworld.com/73067) are ultrasmall boards, but they're also capable and quick. The Teensy comes with 25 I/O pins and the Teensy++ has 46 I/O pins, enabling either one to support a wide range of peripherals. Each of them also has an onboard USB port, to simplify the task of uploading programs. The boards also use Arduino software with a simple add-on, and they support many Arduino programming libraries and example sketches.

Pinguino: The same size and shape as the Arduino Uno, the Pinguino microcontroller (\$35, pinguino.cc) includes a 32-bit MIPS processor core running at 80MHz,

256KB of flash program memory, and 32KB of SRAM data memory. Also, all of the buttons and LEDs are on the edges so you can reach them even if expansion shields are added on top. The Pinguino has an onboard lithium ion battery charger to keep your creation's battery (if any) juiced up—and the board switches to the battery when the alternate power is removed.

MSP430 LaunchPad: The MSP430 LaunchPad (\$4.30, find.pcworld.com/73068), an inexpensive microcontroller from Texas Instruments, emphasizes expandability and ease of use. For \$4.30, you get the actual board with a microcontroller seated in the DIP socket, a second microcontroller that you can swap out whenever you want, a mini-USB cable, PCB connectors to expand the board, and an external crystal for improved clock accuracy.

—Albert Filice ●



The Pinguino microcontroller has an onboard battery charger.



Visit the GeekTech blog at go.pcworld.com/geektech for hacks, tips, and hardware news.

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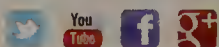
13.3 mm
Ultra-slim design

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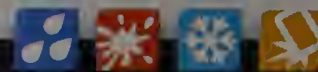


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Consumer Watch

Tips to Cut Your Cell Phone Bill

Why pay more than you have to every month? These tips, tricks, and services can help you save plenty of dough and lower your monster cell phone bill.

BY LIANE CASSAVOY

SEE THAT CELL phone next to you? You're paying too much money for it—every month. We've assembled some simple actions you can take to reduce your cell phone bill. Check them out, and use one or more of them to save big bucks.

TRIM THE FAT: Examine your cell phone to see what services you're paying for above and beyond your voice and data plans. Are you paying your carrier for mobile insurance? A GPS service? Roadside assistance? Visual voicemail? Then think about whether you need these extras. In the case of voicemail, for example, your call log shows you the name and number of incoming callers, anyway—and that's free.

💰 **How much can I save?** Opting out of such billing add-ons could save you at least \$7 each month.

GO ON A DATA DIET: Not ready to opt out of a data plan completely? Try cutting back instead.

Choose the lowest-tiered data plan your carrier offers, and stay within its limits. A handy site, WhatIsMyCap.org, offers tips on avoiding overage charges.

Also, find out what apps are claiming most of your bandwidth; the culprits may be obvious ones like Pandora and Netflix, or sneaky ones like Google Maps or free versions of games that increase your data usage by serving up ads.

💰 **How much can I save?** \$15 to \$35 a month, or more.

COMPRESS, COMPRESS: Having trouble reducing your data usage? Check out Onavo's free iPhone and Android app,

called Onavo Extend, which claims to make your data usage up to five times more efficient. It runs in the background on your phone, compressing your data by routing it through Onavo's servers and stripping out the extras. Yes, theoretically the company could know what data you access, but that's the trade-off for the savings you'll see in your monthly bill.

💰 **How much can I save?** \$15 a month or more.

SWITCH CARRIERS: Signing up with a smaller carrier, like Boost Mobile or U.S. Cellular, can cut your monthly cost a lot.

For example, Boost Mobile offers an unlimited Android Plan for \$55 per month, and an unlimited BlackBerry Plan for \$60 per month. (Both plans cover unlimited nationwide talk, text, Web access, 411 service, instant messaging, and email.) A similar plan from Sprint will cost you \$100 a month for unlimited voice, data, and messaging.

💰 **How much can I save?** \$40 to \$45 per month.

GO CONTRACT-FREE: This isn't the same as buying a prepaid cell phone (that tip's next); you still pay your carrier month-to-month for cellular service, but you pay less. In exchange, you pay more for the phone itself up front.



ON YOUR SIDE

NOT LONG AGO, *PCWorld* mentioned Corsair Accelerator SSD cache drives, designed to speed up access times on mainstream PCs [see *Forward*, March, page 21]. They sounded useful, so I ordered one from Corsair's website. When I received the unit, I discovered that it worked only with a Windows 7 PC, not with my Windows XP desktop. This information was not listed anywhere in the technical information on Corsair's website. I called Corsair's tech support, which confirmed that the drive works only with Windows 7 machines and said I should get a refund. I got an RMA [return] form and sent back the drive. However, instead of a refund, I received an identical replacement. When I contacted Corsair again, the reps offered to refer the situation to a manager if I would submit proof of purchase. I sent them a copy of the invoice I had received direct from Corsair's website. A deafening silence has ensued. Can you help?

—James Baglien, Corvallis, Oregon



MICHELLE MASTIN

OYS responds: We contacted Corsair about Baglien's problem. A representative responded very quickly and offered to contact the product and support team to resolve the issue. Later that morning, a technical support manager called Baglien to sort things out. The Corsair reps issued a prepaid shipping label and said that they would issue Baglien a refund as soon as they received the drive.

Corsair's representatives say that they pride themselves on support and are embarrassed that Baglien

needed *On Your Side's* help to get his refund. They said that they will use this experience to improve their performance.

Recall Alert: Lenovo ThinkCentre M70z and M90z All-in-One Desktop PCs

Lenovo is recalling 188,000 ThinkCentre M70z and M90z all-in-one desktop PCs that were sold worldwide between May 2010 and March 2012. The company says that a problem with the power supply can cause the system to overheat and pose a fire hazard, and that two customers have reported that their PCs overheated, leading to fires that damaged the computers.

If you have an M70z or M90z computer, Lenovo recommends that you immediately stop using it and unplug the power cord. At press time, the company was offering free power-supply replacements for affected systems. To determine if your system is included in the recall, you will need the machine type and serial number from the bottom of your PC. Find more information and enter the type and number data at Lenovo's recall website: www.lenovo.com/aiopsurecall.

✉ Have you run into a problem involving customer service, a warranty, a rebate, or the like for your tech gear? Email us at onyourside@pcworld.com.



💰 **How much can I save?** It depends on the phone you choose, but the strategy could save you big in the long run.

GO PREPAID: This is a sure-fire way to save money. After all, it guarantees that you pay only for minutes that you'll use. And prepaid phones have come a long way in recent years, with carriers offering various cell phones and smartphones with prepaid plans.

💰 **How much can I save?** With one of Virgin Mobile's prepaid "PayLo" plans, you can spend as little as \$20 per month for cell phone service. The lowest-cost plan includes 400 voice minutes.

GO VOIP ONLY: If you're paying for a data plan on your smartphone, why not put it—and your phone's Wi-Fi access—to good use? Fring is one of a number of budget-friendly Voice-over-IP phone services. Dump your voice plan (if your contract lets you) and use a VoIP service, such as Fring, Google Voice, or Skype, to make calls. A *PCWorld* writer took the plunge and lived to tell the tale (see find.pcworld.com/73034).

💰 **How much can I save?** \$40 a month, or more—whatever the monthly cost of your voice plan is.

GET TEXTING HELP: You probably think that you have to pay for a texting plan (at anywhere from \$5 to \$20 per month) or pay a per-message fee (of around 20 cents).

But you have a third alternative, and it's free: Use an app to text at no charge. Free texting apps—including GroupMe, Nimbuzz, and WhatsApp, among many others—let you text and IM for free, via popular messaging networks such as AIM and Facebook. (You may have to ask your family or friends to sign on, to get completely free texting, but the effort is likely to be worth your while.)

💰 **How much can I save?** Kiss your texting plan good-bye, and you can pocket an extra \$5 to \$20 per month.

Microsoft's Windows 8 Upgrade Plan

MICROSOFT RECENTLY provided details on its Windows 8 upgrade program for consumers who buy Windows 7 PCs.

The Windows 8 operating system is in its final stages of development and may ship toward the end of this year (perhaps in time for the holiday shopping season). But Microsoft doesn't want consumers to hold off on purchasing Windows 7 PCs in the meantime.

That's where the Windows Upgrade Offer comes in. Announced along with the latest test version of Windows 8, the Windows Upgrade Offer will allow buyers of Windows 7 computers to upgrade to Windows 8 Pro for just \$15.

To qualify for the discount, consumers must buy a new Windows 7 system between June 2, 2012, and January 31, 2013. They will have until February 28 of that year to download the Windows 8 Pro upgrade.

The maximum number of new Windows 7 machines a consumer can buy as part of the program is five. Windows 7 editions that qualify for the offer are Home Basic, Home Premium, Professional, and Ultimate.

However, customers don't need to apply the Windows 8 upgrade to the corresponding Windows 7 PC they bought during the offer period. If they have an older system running Windows XP, for instance, they can opt to leave Windows 7 on the new PC and upgrade the old one to Windows 8 via download.

Microsoft has arranged programs similar to this one for previous Windows upgrades, but this time the company will be in charge of the redemption process, meaning that it will verify eligibility, handle payments, deliver the software, and provide support.

—Juan Carlos Perez

SKEPTICAL SHOPPER

Phone and Driver: Apps for Your Car



ANNE KANDRA

These smartphone apps will help you save money on gas and repairs, recover from an accident, and avoid tickets.

IF YOU'RE LIKE many folks, the still-shaky economy is pushing you to live more frugally—pinching pennies on the road included. Mobile apps can help you track auto maintenance, find reputable repair shops, avoid traffic backups, monitor fuel efficiency, and more.

(For another option, GasBuddy, see page 68.)

RepairPal (Android and iOS, free): This tool provides estimates for common repair jobs, helps you find the best local shops to do the work, and more. The app has added a feature called "Top Shop" that lists local repair shops that are highly rated by consumers and that promise to match RepairPal's price quote.

Car Minder Plus (iOS, \$3): This maintenance and repair log lists details like oil changes, tire rotations, and tune-ups to help you keep track of what needs to be done when. You can also monitor your car's fuel efficiency for fluctuations, to identify potential problems early. The app backs up all data to your computer.

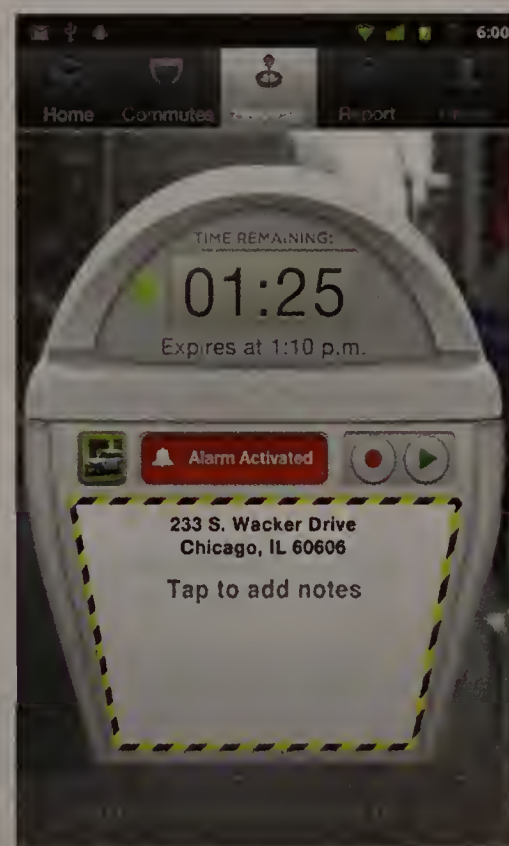
Carbonga (Android and iOS, \$5): Install the app, connect your phone to your car's on-board diagnostic port using a special OBD-to-iPhone cable (sold separately, \$99), and get a report on your car's safety systems.

CarButler (Android and iOS, free): Check weather and traffic conditions, compare route options, and get driving time estimates. You can also find nearby gas stations, parking lots, and car washes. It'll even say when your parking meter is about to time out.

VehiCal (Android and iOS, free): Particularly useful for business travelers on the road, VehiCal calculates and monitors vehicle-related information and expenses—fuel consumption, tolls, parking, mileage, and more.

iWrecked (Android and iOS, free): If you're involved in an accident, use this app to log all the details, including insurance info. Take unlimited photos of the damage and the scene, and send a detailed PDF report directly to your insurance company. The app also includes emergency contact numbers and resources for taxis and towing.

Trapster (Android and iOS, free): Have a lead foot? Sign up, and Trapster will alert you to speed traps, hidden speed cameras, accidents, and other potential road hazards. ●



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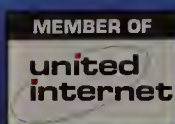
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Let YouTube Build Your Business

As Net users turn to video for their daily LOL, your small business can profit from the trend. Follow these secrets to success on YouTube.

BY CHRISTOPHER NULL

MAKING VIDEOS IS a way to connect with customers, market your wares, and increase your visibility to search engines. Frequently, Google places videos at the top of its search results.

Videos can add real value—and potentially lots of it—to a business because users watch them.

Consumers are interested in how corporate America works, and there are lots of ways to reveal, expound upon, or satirize it for entertainment gold.

Dare to be funny: Humorous videos make the biggest overnight YouTube hits. For instance, a coffee shop could create a lowlight reel of awful open-mic performances, or a hoax cooking show. A jeweler could make a faux Home Shopping Network segment, complete with callers dialing in. A corporate branding expert could stage a product-name brainstorming skit in a conference room, *Mad Men*-style. All of these can persuade viewers to become real customers.

Of course, you know your customers best, and how far you can push comedy, satire, and self-deprecation. Kick back over pizza with trusted colleagues, and brainstorm; the ideas that make you laugh most are probably the ones to pursue first.

Or play it straight: You may have legitimate reasons to explain seriously how a product works or to prove your company's expertise. Gary Vaynerchuk's long-running (now inactive) Wine Library TV turned him into a worldwide sensation, despite largely featuring a guy drinking wine in front of a wall.

Think about your audience: To some degree, your audience chooses you, but you can aim your video at an ideal customer.

If you find a video that you think would resonate with your



Humor helps sell YouTube business videos from Orabrush (above), while RevZilla plays it straight.

customers, check out who's watching it.

To reach YouTube Analytics from any video, click the small graph button to the right of the number of video views. You'll see when the video has been viewed; where the traffic came from; and the age, gender, and location of the audience.

Write a strong script: The best viral videos are tightly scripted productions that were agonized over and carefully honed until they were perfect. They may seem spontaneous and improvised, but that's achieved through careful calculation.

Keep it short: Audiences have very limited patience for Web video, so keep yours under 90 seconds long—the shorter the better. You can cut in postproduction, but you'll be best served by planning for a brief video during the writing process.

Shoot the video effectively: Need help with your first production? Here are some tips on what to do and what to avoid:

- Shoot in high definition, and in widescreen if you can.
- Pay especially careful attention to the lighting, to avoid harsh shadows and dimly lit environments. Take test shots to get a sense of how the finished video is likely to look.
- If you can't afford a boom microphone, try to shoot in >>

otherwise quiet locations, and don't shoot outdoors on windy days. Your camera's microphone is as important as its lens.

- Plan for multiple takes. At the start of each scene, mark the chronological number of the take—and keep track of which takes worked best.
- Shoot with a tripod, and try to avoid moving the camera.
- If your shot has to move, physically reposition the camera; don't zoom.
- Use a real video camera, not a phone, to shoot your video.
- Keep your video as short as possible, cutting every expendable frame.
- Use overlays at the end of the video (or throughout) to add info about your company: your website, phone number, email address, or physical address. Otherwise, steer clear of special effects.

Polish your video: YouTube accounts automatically have a Channel associated with them; to customize yours, click the *Edit Channel* button on your Channel's home page. Here you can promote a featured video, connect to social networks, add links to your business's website, and give your corporate logo and other branding full-on exposure.

When you upload your video, list the keywords for search engine optimization, add descriptions, and check your spelling. Don't overload the keyword fields, but use synonyms that searchers might type when seeking content like yours. YouTube suggests popular terms as you type in its search box. Adding captions or subtitles to your video (find.pcworld.com/73063) can help with SEO, too.

Promote your video: Use social networks to publicize your creation. Also, embed videos on your own website. If your video is genuinely entertaining, submit it to Digg, Reddit, StumbleUpon, and other social news sites.

If you aren't getting the eyeballs, you can promote your video with Google AdWords for Video. If you plan to make video an ongoing project, invite viewers to subscribe to your Channel.

SIMPLY BUSINESS

The Best Email Tool You're Not Using



RICK BROIDA

Most businesspeople would benefit from using an email reminder service.

AMONG THE BEST-KEPT secrets in the business world are email reminder services, which can turn overloaded inboxes into productivity powerhouses.

I use my email inbox as a kind of to-do list, marking as unread any messages I don't have time to answer now or need to act on later. But as my inbox fills up with other mail, those messages get pushed

lower and lower, until they're forced out of sight—and out of mind.

A reminder service works kind of like an email snooze button. You forward a message to an email address that the service specifies; and at the designated time, the message will return to your inbox.

For example, if a PR person emails me about a new product launch that's happening next Monday, I may decide to write about it—but not until the day of the launch. Instead of spending time setting up a reminder in my calendar or to-do list, I simply forward that email to monday@reminderservice.com.

When Monday rolls around, presto: The email returns to the top of my inbox.

Different services have different syntax for the kinds of delays you can set, but for the most part it's pretty straightforward: 2pm@reminderservice.com, tomorrow@reminderservice.com, june1@reminderservice.com, and so on.

I especially appreciate that if an email reappears and I'm still not ready to deal with it, I can click a snooze-delay link right inside the message.

PCWorld's Liane Cassavoy recently examined three free email reminder services: Boomerang for Gmail (find.pcworld.com/72993), Followup.cc (find.pcworld.com/72994), and Followupthen.com (find.pcworld.com/72995). Note that "free" gets you just the basics; for more-advanced features, you'll want to look at pro-level accounts. They're worth every penny, in my humble opinion.

I've tried all three of these services myself and found that all of them work quite well; still, I have to give the nod to Followupthen as my favorite. That said, I also recommend checking out Nudgemail (find.pcworld.com/72996), which has been in beta forever but continues to be entirely free while it remains there.

If you've never tried one of these reminder services, do yourself a favor and give it a shot. It's the kind of thing you'll wonder how you ever lived without.

independent contractor
freelance...

You scheduled this reminder on May 24th for yourself

POSTPONE other

15min	1hr	1d	1w
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Email reminder services such as Followupthen help make you more productive.



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TECH AUDIT

VeriFone's Low-Cost Mobile Payment-Processing System



MICHAEL BROWN

STARTUPS SUCH AS Square and PhoneSwipe spotted a lucrative opportunity to enable small-scale merchants to accept credit card payments, and they've made the most of it. If you have a product or service to sell, all you need to get paid by credit card is a smartphone or tablet, a tiny card swiper, and an account with a vendor.

Now VeriFone has launched a mobile payment-processing platform called Sail, for small and medium-size businesses.

Like the programs that Square and PhoneSwipe offer, Sail gives merchants who sign up a free credit card reader that they can plug into their Apple or Android smartphone or tablet, as well as a free app for processing credit card transactions. Merchants using Sail pay a 2.7 percent fee for each swiped transaction (Square charges 2.75 percent; PhoneSwipe, 2.69 percent); but VeriFone also gives its customers the option of paying a \$10-per-month subscription fee in exchange for a lower transaction fee of 1.95 percent.

VeriFone customers can integrate Sail into their current operations, tying the mobile app to their counter-top equipment so that they can also accept tap-and-pay cards and near-field communication services such as Google Wallet. These features could make Sail more attractive to larger businesses with storefronts and/or higher transaction volume.

A Unique SDK

The feature most likely to set VeriFone's Sail service apart from its rivals is its software development kit, which lets you tie its payment processing to third-party marketing,

The electronic payment company's innovative Sail platform seamlessly links standard mobile credit card services to other customer-focused programs and social media tools.

customer-relationship management, and customer loyalty programs, plus social media tools such as Facebook, Twitter, and Yelp. With the customer's permission, you can send a customized, interactive receipt to the person's email address, as well (Square and PhoneSwipe likewise support email receipts).

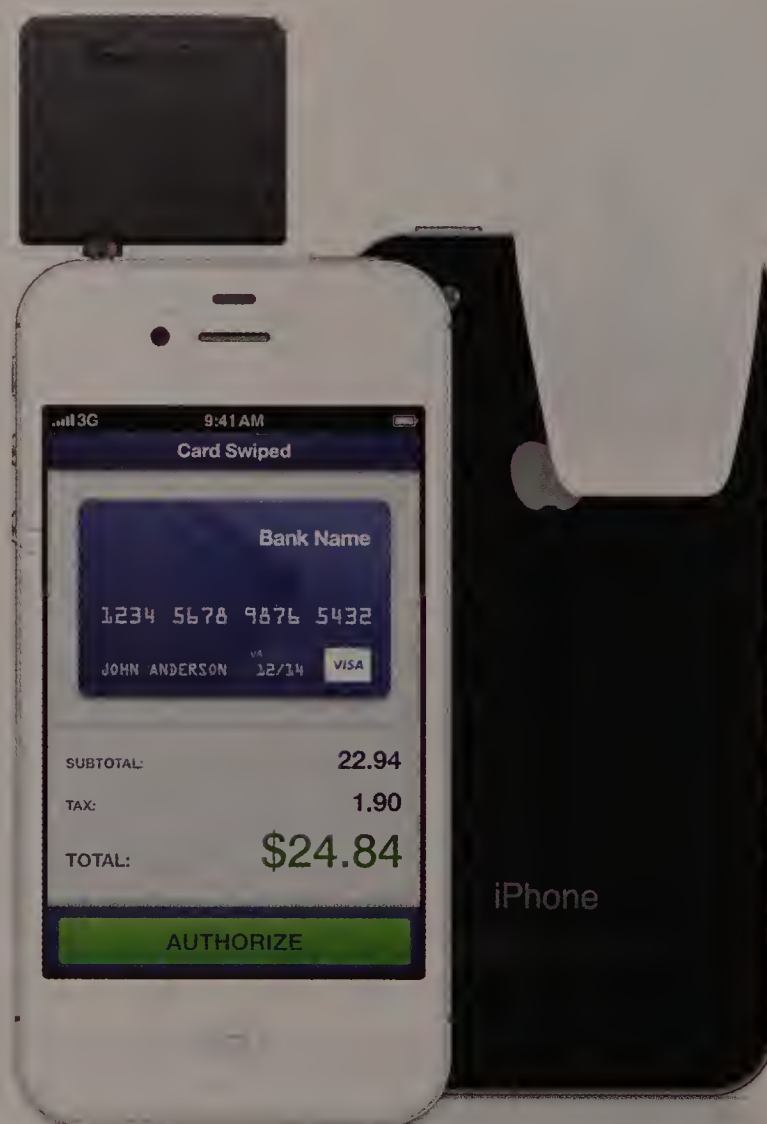
Besides providing the customer with a convenient proof of payment, the emailed receipt may include a note and a link that encourage the customer to post a review of the business on Yelp, or to "like" the merchant's Facebook fan page.

With customers' email addresses in hand, the merchant can send special promotions, announce upcoming sales or events, offer to enroll them in a loyalty program, and more. What might

otherwise have been a one-time transaction becomes an ongoing relationship and an opportunity to gain entirely new customers. The Sail mobile app can read bar codes, too, enabling merchants to redeem coupons and fulfill other offers easily.

Setting Up Sail

VeriFone's Sail app for iOS devices is available for download from the Apple App Store (find.pcworld.com/73002). An Android version should be available by the time you read this. Merchants who sign up for the service (by providing their contact information, Social Security number, and a bank account number) will be able to accept payments through American Express, Discover, MasterCard, and Visa almost immediately (following a "soft" credit inquiry that doesn't affect an individual's credit score). ●



VeriFone's Sail service offers sellers a free credit card reader.

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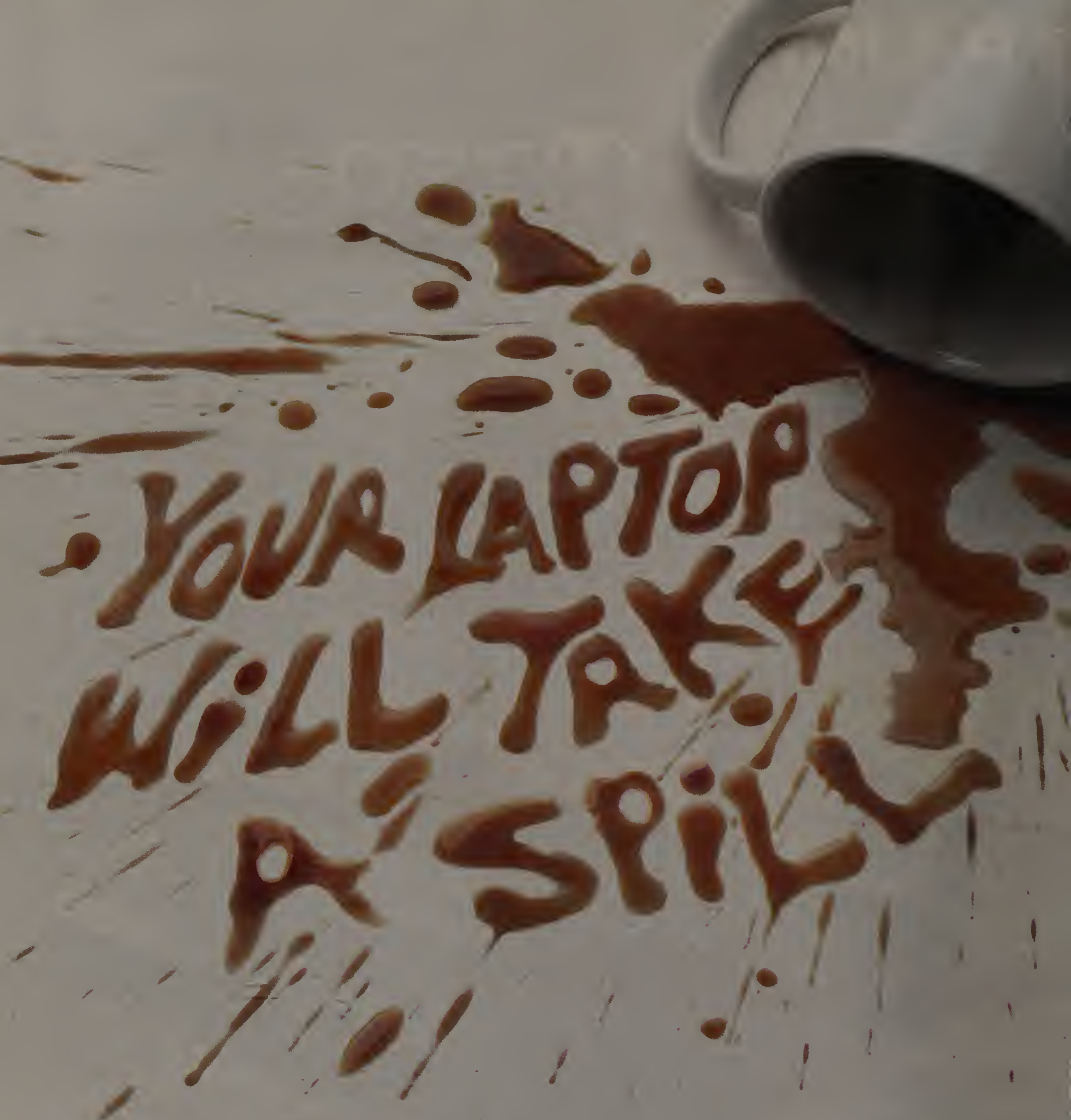
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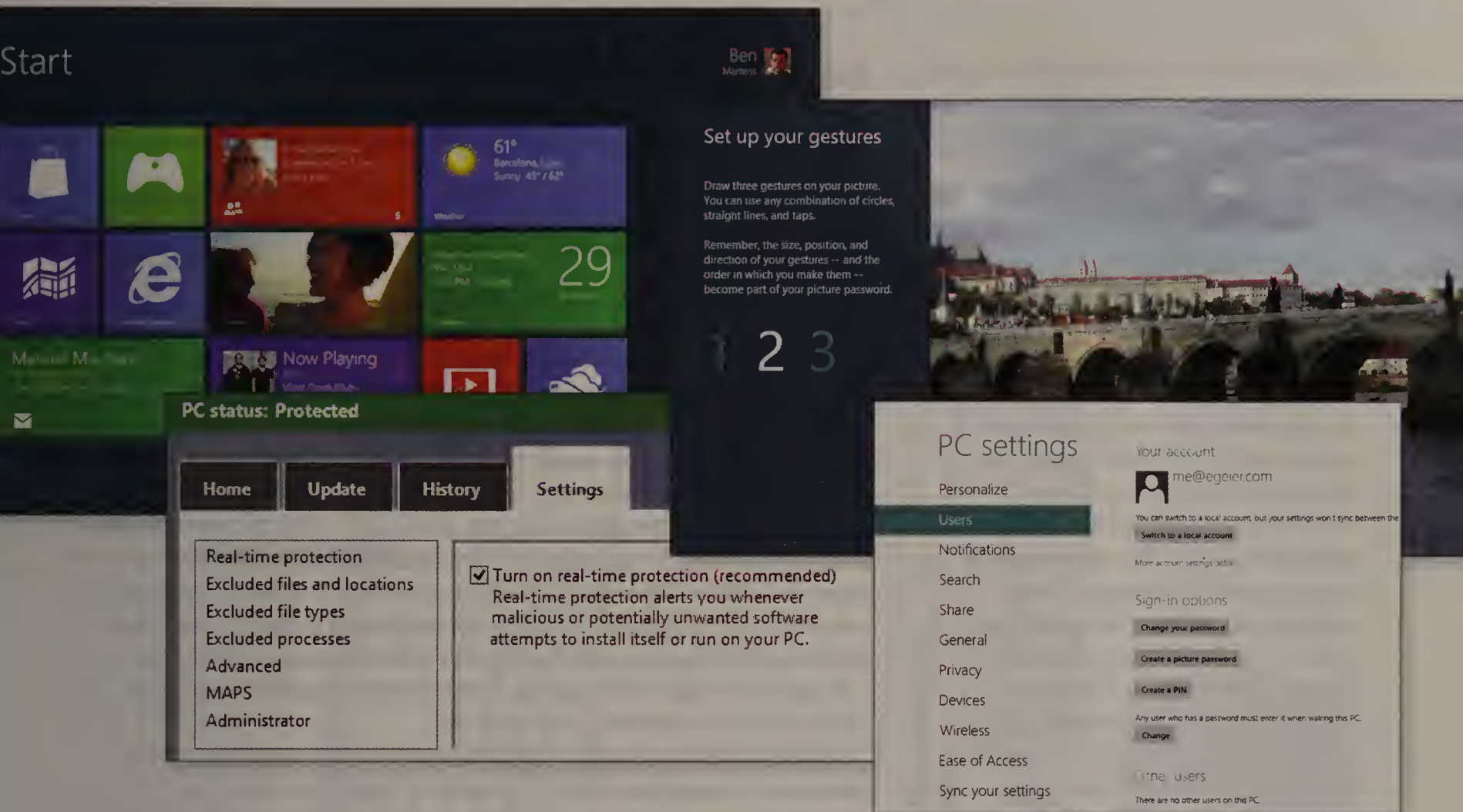
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Security Alert



Windows 8 Security Features: What's New

Some of the most important additions in Microsoft's OS overhaul may be the ones you can't see immediately. Here are Windows 8's major security features.

BY ERIC GEIER

WHEN WINDOWS 8 comes out later this year, the new Start screen and Metro-style apps will likely be the first changes you'll notice. But Microsoft is also making some serious security enhancements in the OS—and the result just may be the biggest improvement to Windows security yet.

Antivirus Comes Preinstalled

You'll enjoy protection from viruses, spyware, Trojan horses, rootkits, and other malware from the first day you turn on your Windows 8 PC. The updated Windows Defender now includes traditional antivirus functions on top of the spyware safeguards and other security features that it has had since Windows Vista.

As a result, it's now similar in function (and in look and feel) to the free Microsoft Security Essentials optional download.

Since Windows Defender will provide at least basic virus and malware protection, purchasing yearly antivirus subscriptions or downloading a free antivirus package is now entirely optional. Of course, you may disable Windows Defender and use another antivirus utility that promises stronger protection and more features, if that's what you prefer.

Better Download Screening

When Microsoft released Internet Explorer 9, it updated the browser's SmartScreen Filter to detect and block unknown and potentially malicious programs that you download; the function complements IE's website filtering, which blocks phishing and malicious sites. With Windows 8, the program-monitoring portion of SmartScreen is built into the OS itself, and it will work regardless of the browser you use.

The first time you run a downloaded program, SmartScreen checks it against a list of known safe applications, and alerts you if the program has the potential to be malware.

With the debut of SmartScreen, Microsoft has elected to remove the old-style Security Warning alerts, which regularly >>

cautioned users about running downloaded programs. This is a welcome change, as it reduces the number of alerts—in Windows 8, you'll see a warning only when something is amiss.

Faster, More Secure Startup

In Windows 8, Microsoft is promoting a new boot method, UEFI (Unified Extensible Firmware Interface), which replaces the archaic BIOS. Thanks to UEFI and other enhancements, your PC will boot in as little as 8 seconds, from the time you press the power button.

Meanwhile, the Secure Boot feature of UEFI will prevent advanced malware (such as bootkits and rootkits) from causing damage, and it will stop other attacks (such as malware that loads unauthorized operating systems).

Though Windows 8 will work on PCs with the BIOS boot system, Microsoft will require new PCs that carry Windows 8 Certification to use UEFI with Secure Boot enabled by default. This requirement could complicate the process of using Linux or dual-booting multiple OSs. However, Microsoft is also requiring certification participants to offer a way for users to disable Secure Boot on PCs (though not on tablets).

Two New Password Types

Windows 8 introduces two new password types for logging in to your Windows account: a four-digit PIN and a "picture password." For the latter, you choose a photo or an image and draw three gestures (a combination of circles, straight lines, or taps/clicks) in different places to create your "password."

Even if you decide to use these new password types, you still must set up a regular password. Sometimes—such as when you need administrative approval in order to change system settings as a standard user—you'll have to enter the regular password; but you can log in to your account using the PIN, the picture, or your regular password.

BUGS & FIXES

Adobe Patches Flash and Shockwave

Plus: Apple releases updates, and Google announces Chrome 19.



JAMES MULROY

FIRE UP YOUR software updaters: Adobe, Apple, and Google recently released a number of security patches. Here's a rundown of what's new.

Flash, Shockwave, CS5 fixes: Adobe patched Flash Player, Shockwave Player, Illustrator CS5.5, Photoshop CS5, and Flash Professional CS5.5. One patch corrects a problem in Flash Player for Windows, Mac OS X, and Linux that could cause it to crash or allow an attacker to take control of your system. The upgrades for Illustrator, Photoshop, and Flash Professional also address flaws that could permit an attacker to commandeer your system, and they fix memory corruption vulnerabilities that could lead to arbitrary code execution (security-speak for bad guys running malware on your PC).

To learn more about these updates—and to download them manually—visit find.pcworld.com/72041 and find.pcworld.com/73033.

Updates for Apple products: Apple released six security updates across its platforms, including QuickTime 7.7.2, Safari 5.1.7, and OS X Lion 10.7.4.

QuickTime 7.7.2 (find.pcworld.com/73035) has fixes for issues related to memory

usage, improper handling of a maliciously crafted MP4 file, and other media files. Apple found that these bugs could cause an application to terminate abruptly or could permit arbitrary code execution.

Apple also released Safari 5.1.7 for Mac OS X and OS X Server 10.6.8, OS X Lion and Lion Server 10.7.4, and Windows 7, Vista, and XP SP2 and later. The update (find.pcworld.com/73036) brought three fixes for WebKit, the page-rendering engine for Safari, addressing flaws that could cause the pro-

gram to terminate unexpectedly or allow cross-site scripting attacks.

Meanwhile, the OS X Lion 10.7.4 update (find.pcworld.com/73037) patches holes that could let an attacker execute arbitrary code on your system, allow an attacker to decrypt data under an SSL connection, and cause program or system crashes.

A new Chrome release: Chrome 19 for Chromebooks, Windows, Mac, Linux, and Chrome Frame patches 31 security vulnerabilities in Google's browser.

One flaw, rated critical, in Chrome's websockets—a technology that allows communication between a website and your computer—prevented Chrome from properly handling communication encrypted in SSL. Through this vulnerability, remote attackers could execute arbitrary code on your system or cause a denial of service. The issue is fixed in Chrome 19.0.1084.52 and later.

Google also patched eight use-after-free vulnerabilities that could cause crashes and possibly allow denial-of-service attacks, effectively locking you out of your PC. To learn more, visit find.pcworld.com/73038 and find.pcworld.com/73039.



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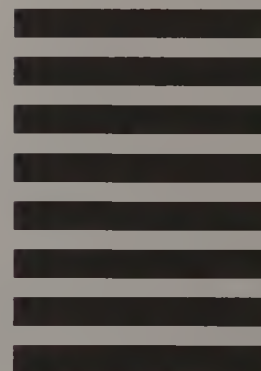
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Ransomware Accuses Users of Lawbreaking

ONLINE SCAMMERS' LATEST ploy lures Internet users into installing ransomware, which then tells them that they violated federal law by viewing child porn and must pay a fine.

The U.S. Internet Crime Complaint Center (IC3) is warning the public about Reveton, a new type of ransomware (find.pcworld.com/73032). Reveton is a variant of the Trojan horse known as Citadel, which in turn is based on Zeus, one of the oldest and most used online-banking Trojan horses. The Citadel crimeware toolkit is now open-source and is evolving and spreading rapidly, resulting in insidious new versions.

The IC3 says Reveton victims are lured to a drive-by download website that installs the ransomware on their computers. Shortly thereafter, the PC seizes up, and a displayed warning declares that the Justice Department's Computer Crime & Intellectual Property Section has identified the user's IP address as having visited sites offering child porn and other illegal content.

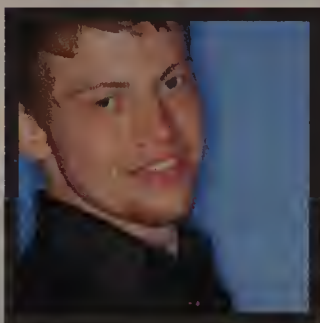
"To unlock their computer, the user is instructed to pay a \$100 fine to the U.S. Department of Justice, using prepaid money card services. The geographic location of the user's IP address determines what payment services are offered," IC3 explains in its warning. "In addition to the ransomware, the Citadel malware continues to operate on the compromised computer, and can be used to commit online banking and credit card fraud."

The bottom line: As always, be careful online. Don't click links in email messages or on websites that are unfamiliar to you, or that come from people or sources you don't know.

—Christina DesMarais

PRIVACY WATCH

Spotflux Guards Your Privacy for Free



ALEX WAWRO

A new startup's free app anonymizes and encrypts your connection, and scans for malware, while you browse.

KEEPING YOUR DATA private while you're browsing the Web can be time-consuming if you want to stop malware, IP-address snoopers, and malicious ads. Spotflux, a New York startup, is aiming to change that with a no-cost, easy-to-use program that encrypts your Internet connection, anonymizes your IP address, and reduces your risk of infection while you surf. Did I mention that it's free?

You download the app for Windows or Mac OS X from www.spotflux.com (iOS and Android apps are in development), and run it. Installation is easy, and you can set the app to access a proxy server for added safety (or to ensure that you can reach region-restricted sites after your IP address becomes anonymous). When you access the Net while the app is running, all data moving into or out of your PC shuttles through Spotflux servers by way of a 128-bit SSL encrypted connection; software on the servers scans your data for malware, and eliminates it.

This requires a certain level of trust, since the Spotflux servers are privy to everything you do. The payoff is the assurance that your activities are anonymized and protected. While Spotflux is cagey about what it looks for when filtering traffic (lest the bad guys learn how to circumvent the filters), we do know that it regularly updates its servers to scan for widespread malware such as DNSChanger. And since Spotflux's staff operates the Spotflux servers, the service can reasonably promise that nobody outside the company can use it to snoop on you.

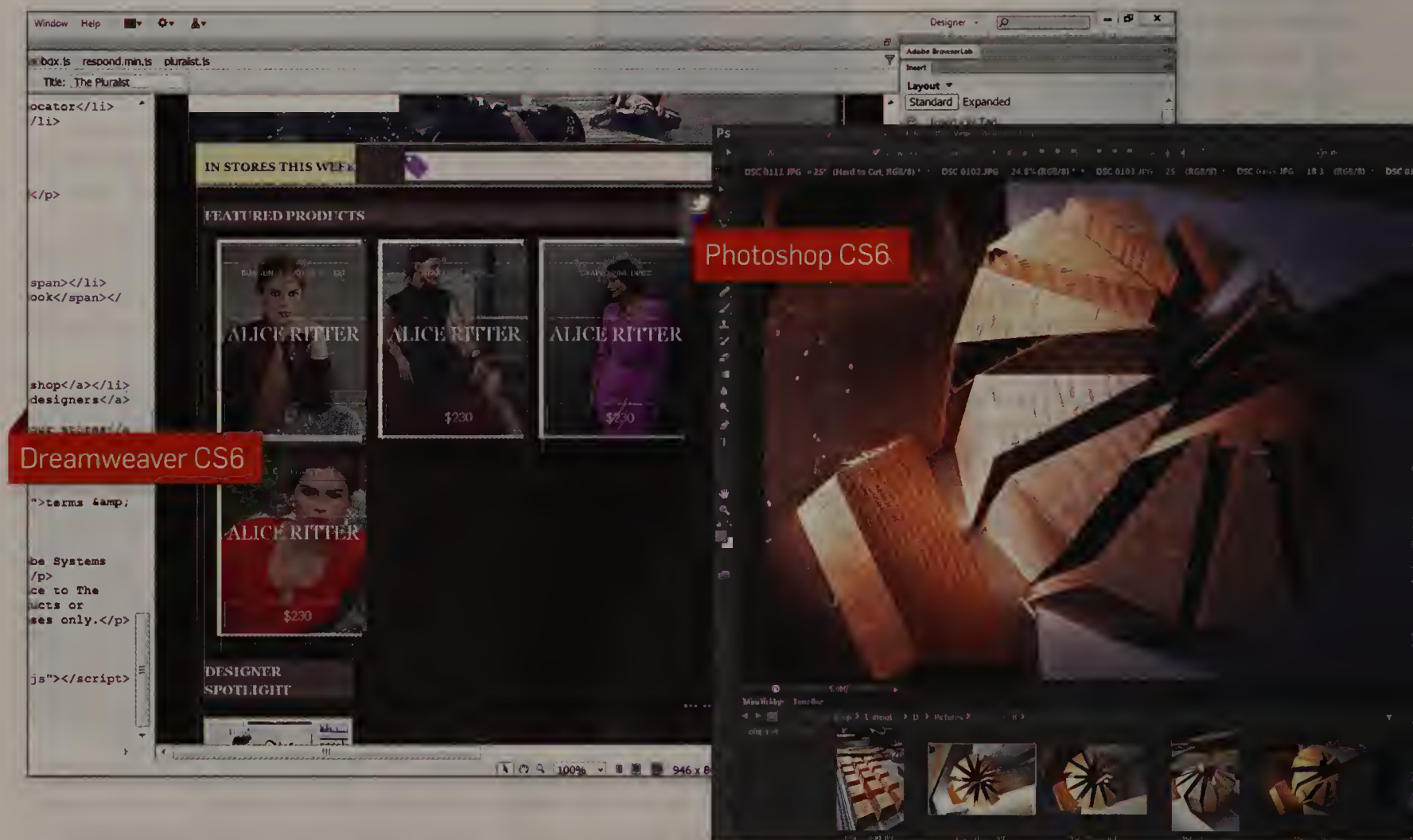


Benefits and Drawbacks

Since your traffic goes through the Spotflux servers twice (first when your browser sends a request, and again when a site responds), you will see a slight performance hit. I ran speed tests, and my download speed consistently degraded by roughly 20 percent while the app was running. The upside: I never saw an irritating ad during several days of browsing, and my antivirus scans came up clean despite my rampant downloading. Plus, according to AT&T, my bandwidth usage was lower than ever during my weekend with Spotflux, which may be an unintended but wonderful consequence of filtering out unwanted ads.

It's tough to anticipate how the company might respond to government or law enforcement requests for user data (see its stringent privacy policy at find.pcworld.com/73030), but you should try Spotflux if you want a simple tool that increases your online privacy. Once you're ready for more-comprehensive privacy-protection methods, check out our updated security guides at find.pcworld.com/73031. ●

Reviews & Rankings



Adobe Creative Suite 6: More HTML5 Power

With the new version of its Creative Suite, Adobe updates its Web design toolkit for the HTML5 future—and just as important, it remains in a class by itself.

BY ALAN STAFFORD

HTML5 IS THE new markup language of the Web. Adobe's HTML5-oriented Creative Suite 6, a collection of design tools for the Web and multimedia, comprises 14 applications grouped into four major bundles, some with enhanced versions: Design Standard (\$1299), Design and Web Premium (\$1899), Production Premium (also \$1899), and Master Collec-

tion (\$2599). You can also buy nearly all of the applications individually. Photoshop (image editing) runs for \$699, Premiere Pro (video editing) is \$799, and Dreamweaver (Web development) is \$399.

Creative Suite 6 is full of technological triumphs, from Photoshop CS6's and Premiere Pro CS6's use of GPU acceleration to Dreamweaver CS6's ability to output smartphone apps for almost any mobile operating system

INSIDE



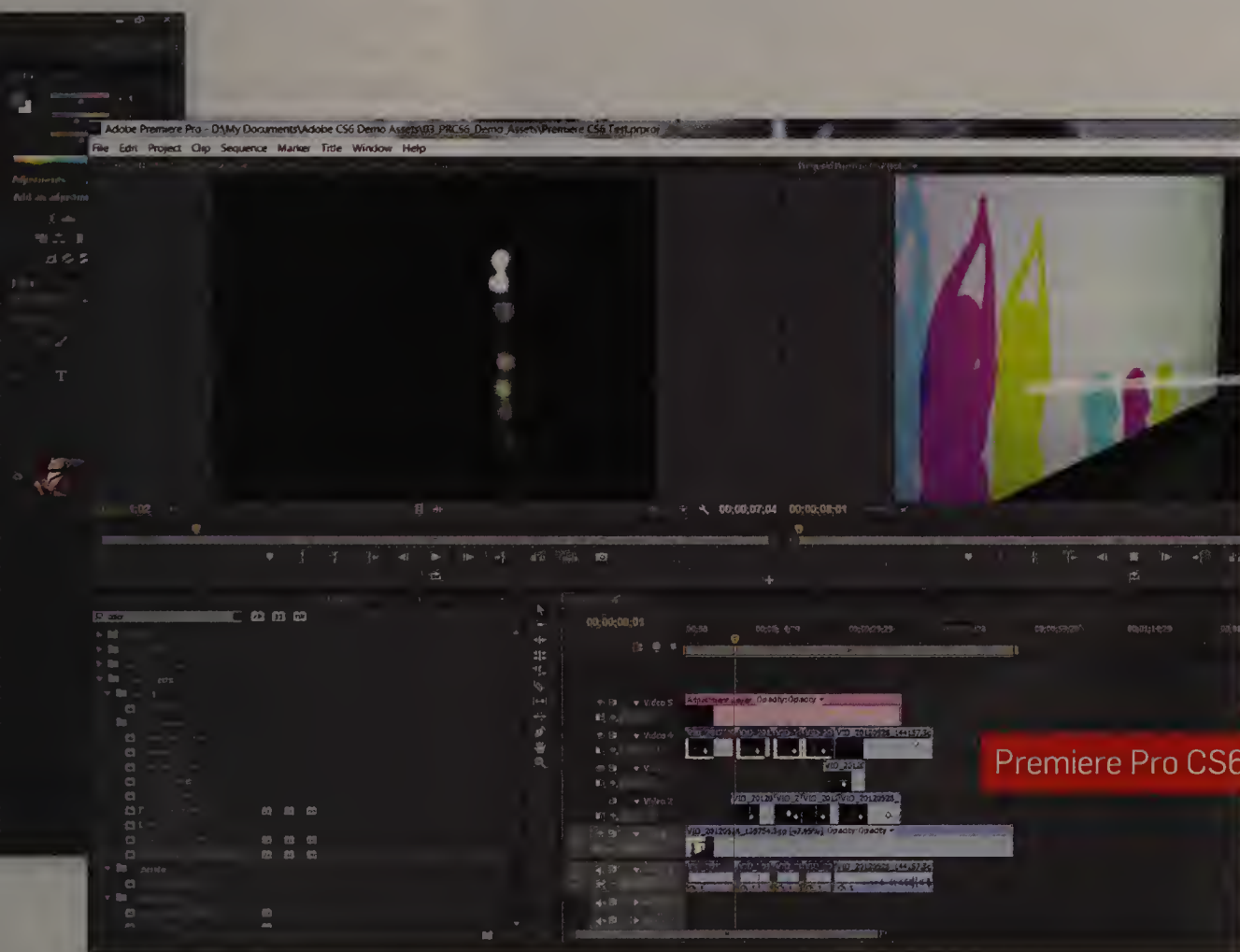
44 SAMSUNG GALAXY Player 3.6



46 PANASONIC LUMIX DMC-ZS20



51 NVIDIA GEFORCE GTX 670



Premiere Pro CS6

by transferring their production to the cloud.

We review those three major applications here.

Dreamweaver CS6

In Web-page design, the popularity of Adobe's Flash multimedia platform has been nose-diving, while HTML5 is skyrocketing. Adobe's new, \$399 Dreamweaver CS6 provides tools to

serve up HTML5-based designs on desktops, tablets, and smartphones.

Fluid Layouts, Fluid Design:

All website traffic is growing, but mobile website traffic is growing the fastest. Dreamweaver CS6's new Fluid Grid Layout tool helps you design for all screen sizes—from smartphone to tablet to desktop.

Fluid Grid Layouts are

meant to give you a starting point for an adaptive design, where you build your content once, and then the Web pages on which that content lives will reconfigure themselves to display the content properly on any size screen.

I found Fluid Grid Layouts easy enough to make, but resizing the containers worked a little sluggishly, and the undo function often didn't

work. Dreamweaver's interface, though, has new, useful buttons to show smart-phone, tablet, and desktop screen viewports—very helpful for previewing content.

A new palette and associated dialog box help you set up CSS Transitions—motion effects. Once you've got down how they work, you can build spiffy actions, such as rollovers and other movements, pretty simply.

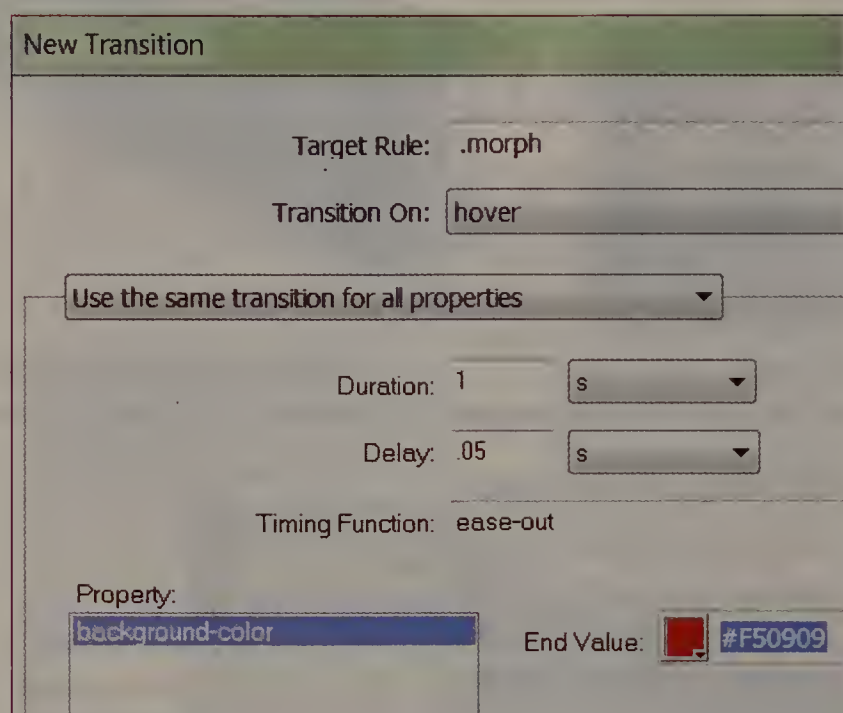
The App Is Where It's At:

The previous version of Dreamweaver allowed users to build mobile apps (as well as mobile websites), but doing so required some effort: You had to download the Android Software Developer's Kit on your own, install it, and then tell Dreamweaver where to find it.

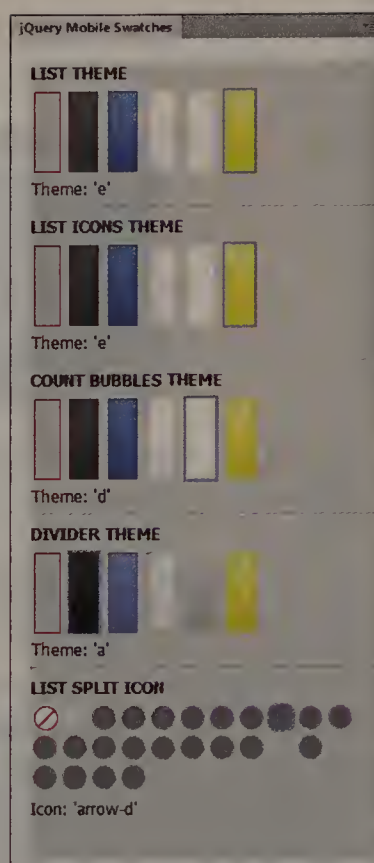
Last year, Adobe acquired PhoneGap, a company that created a platform for building mobile apps, and as a »

MORE ONLINE

For complete reviews of the applications we tested for this story, please visit find.pcworld.com/73071.



Left: The CSS Transitions palette. **Right:** A jQuery swatch panel.



result you can now upload your app projects to PhoneGap.com from within Dreamweaver CS6, and use the new PhoneGap palettes.

You can design your app's interface with the help of a new jQuery swatches panel. You can also build or modify button designs in Adobe Fireworks, which will output browser-specific HTML5 code, or you can build your own app designs on jQuery Mobile's Theme-Roller site and download them to Dreamweaver CS6.

Of all the Creative Suite applications, Dreamweaver CS6 is the one that's stuffed with the most goodies. It also stands out as the application in the suite that is growing the most quickly, and it provides the useful features needed to keep up with the exponential creativity that's happening online. ★★★★★; \$399; Adobe Systems; find.pcworld.com/73072

Photoshop CS6

The latest version of the cornerstone of Creative Suite, Photoshop CS6 (\$699) borrows a little magic from its Premiere Pro suitemate, and adds some magic of its own in this major upgrade.

Improved GPU Acceleration: Photoshop CS6 kicks up GPU acceleration with its new Mercury Graphics Engine, similar to Premiere Pro CS6's powerful Mercury Playback Engine. In Photoshop CS6, several tools have GPU acceleration, including some filters, the substantially updated cropping tool, and 3D functions in Photoshop CS6 Extended.

To test the engine, I opened a 600MB image with 20 layers using a four-year-old dual-Xeon workstation, with the graphics acceleration turned on, then turned off. In either mode, the image opened in the same amount of time, and I had no trouble flicking it around my screen.

Some features, such as the new Oil Paint filter, refused to work with GPU acceleration turned off; but with acceleration enabled, both this filter and the Liquify tool flew.

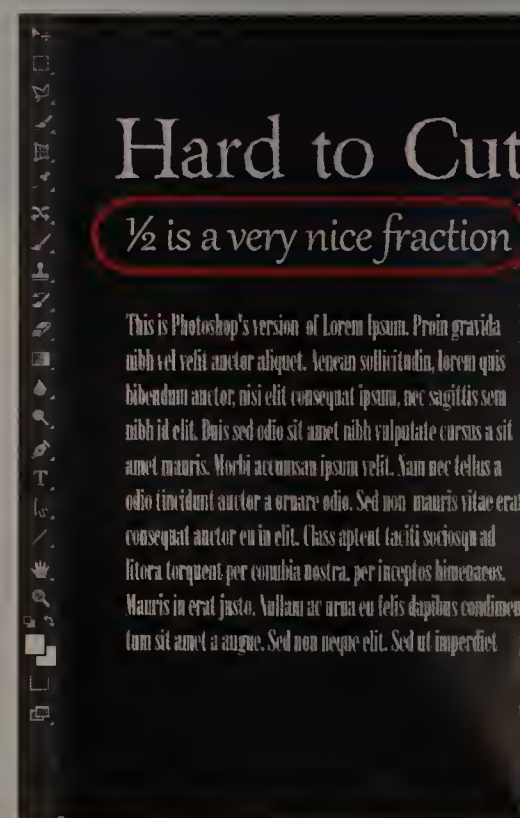
The updated cropping tool encourages a new way of cropping that is nondestructive: When you crop an image, you can choose to retain (but hide) the cropped pixels, so that if you need to get them back later, you can do so without starting over.

The brand-new Perspective Crop is an excellent tool—with it, you draw a cropping box over an image that has been taken at an angle that skews or distorts the image, and then adjust where one or more corners of your image should be.

But the tool I found most impressive is Content-Aware Move. As with Photoshop's other content-aware tools, this one analyzes existing pixels to clone large swaths

of pixels for use elsewhere in an image. For example, in an image of a person in front of a so-so background, I could draw a rough selection around that person, and then use the Content-Aware Move tool to clone the desirable part of the background over the unwanted area in one step, leaving the person untouched, despite my imperfect selection.

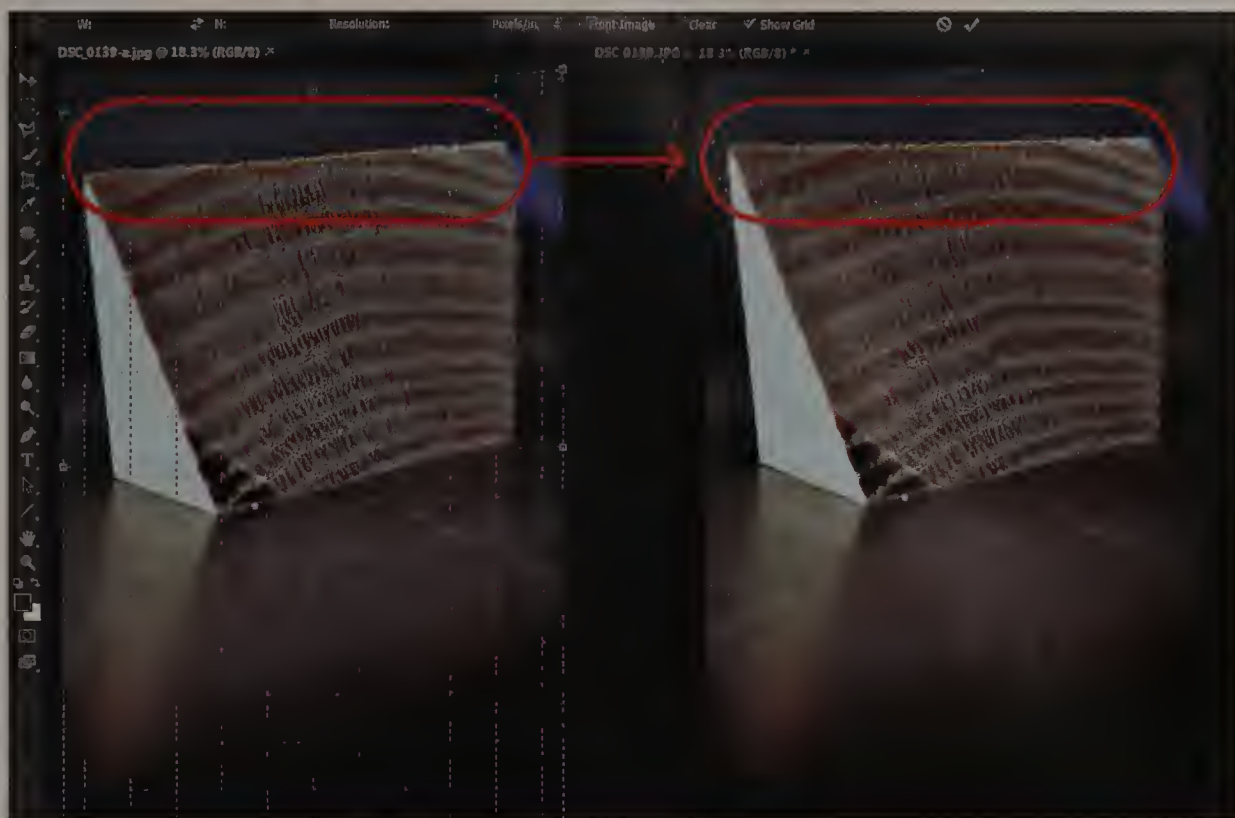
What's Your Type? For some projects, especially ones that incorporate text, I've had to choose between Photoshop and Adobe InDesign. That may happen less often now that Photoshop CS6 has ramped-up text tools, such as a Text menu and several new controls over text, including the ability to format ordinals and fractions properly. A new type-rendering engine makes text appear cleaner and sharper. You can even paste dummy placeholder text



automatically, or copy the style of a block of text and apply that style elsewhere.

Photoshop has had a 'Save for Web' feature for a long time, but it still doesn't compress images as well or as much as its suitemate Adobe Fireworks does. If you need Photoshop's tools for your Web-bound graphics, create in Photoshop, save your file, open that Photoshop file in Fireworks, and then export your final image.

A nice addition is a new interface-text-size setting. Those of us who have been peering at computer monitors for most of our lives and have the poor eyesight to show for it will appreciate that Photoshop now lets users set the menus to display small, medium, or large text. None of the other CS6



Photoshop's new Perspective Crop tool; notice how the wood piece's top edge is straightened.

applications have it, though.

The Layers palette now provides filters: With the click of a button, you can show only text layers, or display only pixel, adjustment, shape, or smart-object layers (or combinations of those types), and you can toggle

the filtering with just a click.

Video Capabilities: Photoshop has had basic video editing features for a while, but its capabilities have been enhanced in CS6, thanks in good part to an emphasis on GPU acceleration.

You can open 70 different video formats in Photoshop CS6 and add layers—er, tracks—trim, add basic video and audio transitions, apply effects and the like, and then export the result as a video in one of three formats using the built-in Media Encoder.

★★★★★; \$699; Adobe Systems; find.pcworld.com/73073

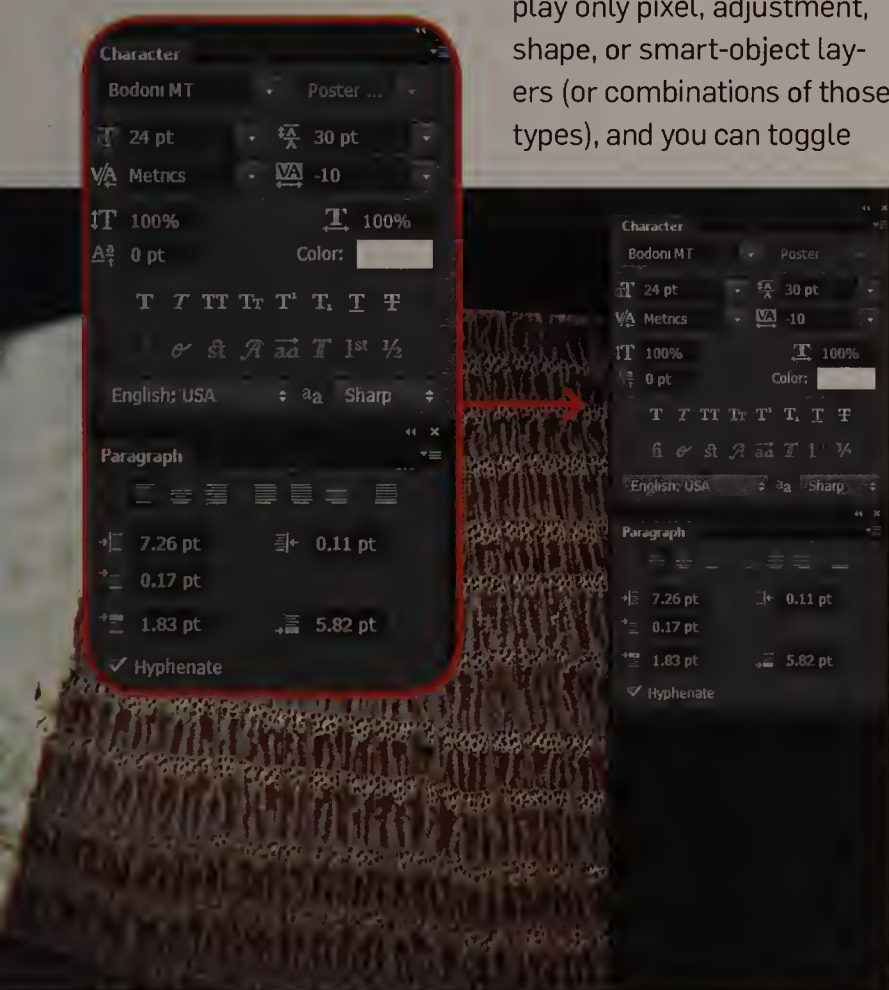
Premiere Pro CS6

Adobe Premiere Pro CS6 builds upon the significant performance improvements

the company made in previous iterations of its flagship video editing application. In CS6, Adobe has found several ways to take better advantage of those huge leaps in performance. In addition, Premiere Pro CS6 (\$799) offers even more enhancements to its functionality.

A Pretty Face, Plus Easy Scrubbing: At first glance, Premiere Pro CS6 looks very similar to its predecessors, charcoal-colored interface and all. But Adobe has added more flexibility and customizability. The Project panel, for example, now can show source clips at a much larger size—at maximum magnification, four clips filled the width of my 24-inch monitor.

A built-in Media Browser lets you look at files on your system and drag them into your Project. And a hover-scrub feature allows you to



play the clips as you run your mouse over them. Click on a clip, and a timeline appears; plus, in the Project view, keyboard commands can set in and out points. It's great for rough-cutting many clips.

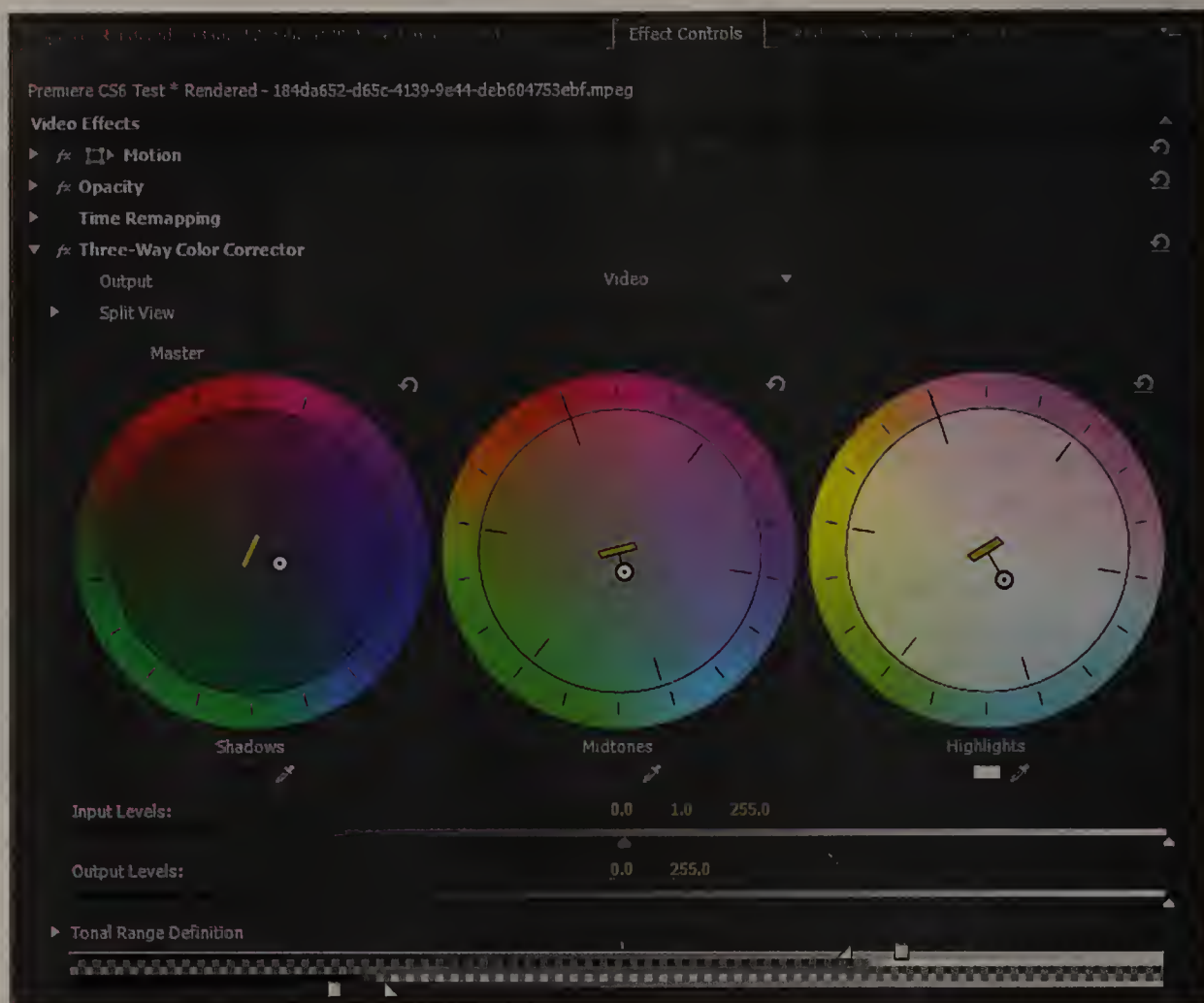
And Adobe has greatly improved its tools for trimming video, as well. Double-click on an edit point in the timeline, and a new trim window appears in the program window. Here, you can click buttons to trim backward or forward by 5 seconds or 1 second, and you can see the outgoing clip and the incoming clip simultaneously.

You can now customize the buttons that appear below the source and program windows, and hovering over a button shows its function and its keyboard shortcut.

Premiere Pro CS6's Uninterrupted Playback feature lets you set your composition to continue rolling while you do other things, like correcting color (or even checking email in another program). Previously, multitasking would have halted playback.

New Editing Features:

Other improvements include the Warp Stabilizer (for fixing jittery video); it is GPU-accelerated and takes a little while to analyze a clip, but afterward it doesn't need to do that again. Also, the maximum number of video tracks you can play within the multicam editing mode (which helps you cut between different camera shots) is now limited only by your system power. If you have mono, stereo, and 5.1-channel



Premiere Pro's three-way color-correction panel has wheels for shadows, midtones, and highlights.

audio clips, you can add them all to the same track.

Premiere Pro CS6's three-way color corrector isn't new, but it has received a significant update, and it too is GPU-accelerated. The tool's color wheels, for shadows, midtones, and highlights, each have reset buttons, so if you want to tweak only one, you don't have to start over; each has its own color picker, too. Color saturation controls are also independently adjustable.

Premiere Pro's new Adjustment Layers feature, as in Photoshop, lets you add an adjustment layer and then apply effects to it; all the tracks below it will receive the benefit of the layer changes, which can help con-

sistency. Toggle the adjustment layer's visibility, and it will toggle the visibility of the effects on the underlying layers. It's a subtle but very useful addition.

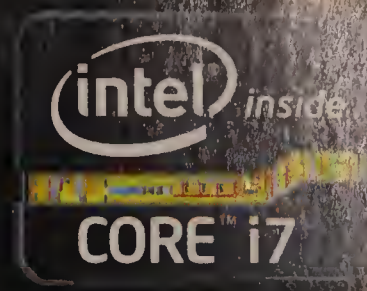
The GPU Factor: With the Mercury Playback Engine turned on, I was able to export a short but complex high-definition sequence in Premiere Pro CS6 in 2 minutes, 18 seconds. When I disabled the Mercury Playback Engine in CS6 and exported the same project using only my workstation's dual Xeon CPUs, the job required 14 minutes, 30 seconds. Clearly, if you're going to use Premiere Pro extensively, your money is best put into GPU power—into graphics cards—not CPU power.

Finally, the stand-alone Media Encoder that comes with Premiere Pro CS6 and that works with other Creative Suite products is a 64-bit application. You can set its watched-folder feature to output multiple video formats, and Media Encoder processes those files concurrently. Unfortunately, it still won't output WebM or Ogg video, two HTML5-friendly Web video formats.

That aside, however, Premiere Pro CS6 broadens its lead over other video editing applications—and its GPU-accelerated performance still smokes anything else that you can buy.

★★★★★; \$799; Adobe Systems; find.pcworld.com/73074

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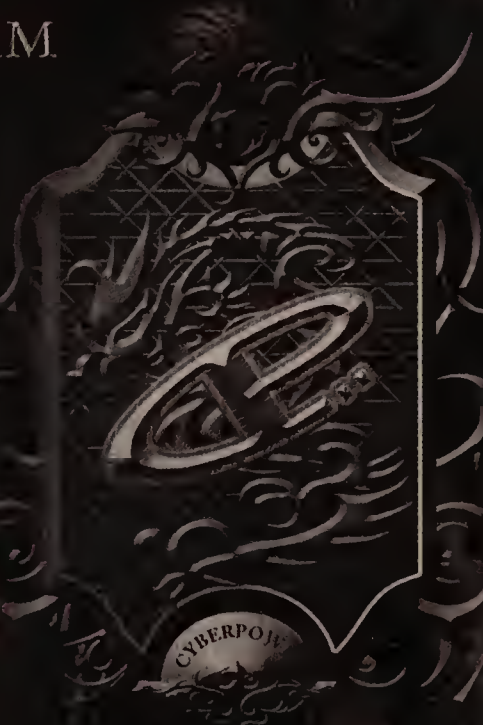


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New Windows 7 Tablets Show Their Diversity



THREE RECENT Windows 7 tablets artfully balance performance, battery life, build quality, and overall features—in strikingly different ways. Here's a closer look. For a full a comparison of Windows tablets, see find.pcworld.com/73081.

Fujitsu Stylistic Q550

The Stylistic Q550 (\$849 as reviewed) carries a 1.5GHz Intel Atom Z670 processor and 2GB of RAM, and comes crammed with business features such as a fingerprint scanner, a smart-card reader, and a removable battery.

Storage options include either a 30GB or 62GB solid-state drive; and you can expand the available space via the tablet's SD Card slot.

Wireless connectivity includes Wi-Fi 802.11a/b/g/n and Bluetooth 3.0. A rear-facing 1.3-megapixel camera and a front-facing VGA camera handle image-capture chores; image quality is passable for videoconferencing or snapping quick photos in the field, but not much more.

The bottom of the Q550 accommodates a dock connector, a grille for the single speaker, and the AC adapter slot. The right side is studded with buttons and switches, including a wireless on/off switch, a Ctrl-Alt-Delete button, a screen-rotation button, a button for the on-screen keyboard, and the power switch. At the top is the SD Card slot; near it on the back

is the fingerprint reader.

On the left side of the Stylistic Q550, at the top and bottom, are dual microphones. You'll also find a single USB port, a smart-card slot, a headphone jack, and a full-size HDMI port.

The 10.1-inch, 1280-by-800-pixel IPS display offers a great 160-degree range of viewing angles. In my testing, the matte screen reduced glare when I used the tablet outdoors or under bright office lights.

For this tablet, Fujitsu adopted N-trig's four-point capacitive multitouch screen and active digitizer pen.

The Stylistic Q550 is relatively light—1.7 pounds with the two-cell battery, and 1.9 pounds with the four-cell battery. The soft-touch rubber back and curved edges make the tablet quite comfortable to hold.

The device's fanless design means that some heat accumulates, though not uncomfortably so.

In the PCWorld Labs' performance tests, the Stylistic Q550 performed in line with other Atom Oaktrail-based tablets, but not as well as the AMD-based Acer Iconia Tab W500. With the four-cell battery in place, Fujitsu's tablet supplied 6 hours,

21 minutes of battery life.

The Stylistic Q550 handled office work smoothly, and its Intel GMA 600 integrated graphics ably handled my 720p test videos.

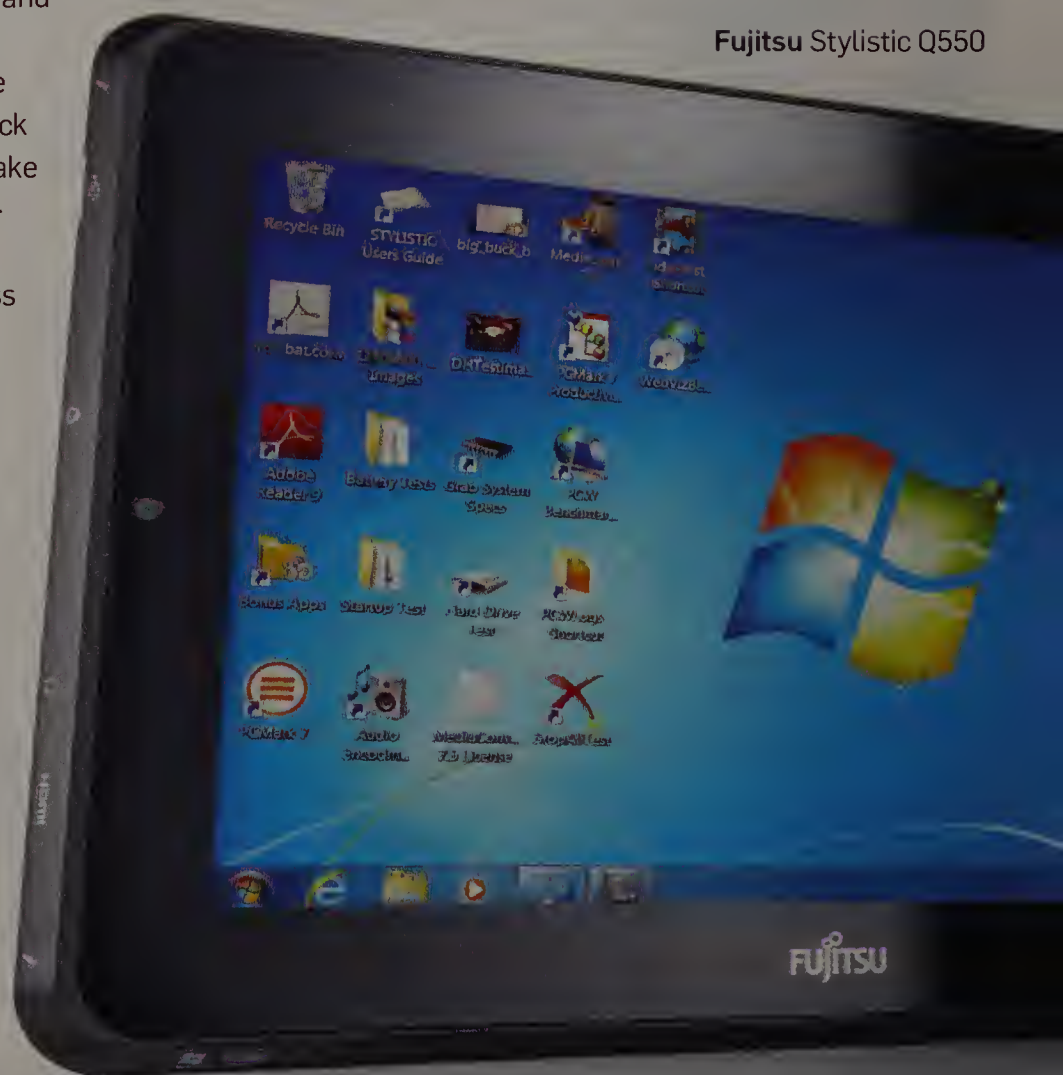
Streaming video posed more of a problem. The tablet could stream Netflix to a TV over HDMI, but only if I left it alone once it got going. Any attempts to change the player's volume or to skip to a different part of the stream killed the playback.

The single speaker on the bottom of the unit put out too little volume to make dialogue comfortably audible, even in a quiet room. The headphone jack generated plenty of signal, though.

The Fujitsu Stylistic Q550 ticks all the right business boxes: security, swappable battery, matte screen, and active digitizer. The only let-down is the poky Atom processor. This tablet should be able to handle general office

Fujitsu's Stylistic Q550 comes with lots of business features, while Acer's Iconia Tab W500 offers a keyboard dock for maximum flexibility.

Fujitsu Stylistic Q550



tasks smoothly. Its usability, battery life, and Windows 7 convenience make it one of the best slate-style business tablets on the market today. ★★★★★; \$849; Fujitsu; find.pcworld.com/73077

Acer Iconia Tab W500

The Iconia Tab W500 tablet is a slate-style machine with a keyboard dock for laptop

use. But this tablet reflects a lot of compromises.

Configured with a 1GHz AMD C-50 processor, 2GB of RAM, and an AMD Radeon HD 6250 graphics chip with 256MB of dedicated video memory, the tablet ran Windows with ease and provided strong multimedia playback in tests. It capably handled all of my 720p video files,

and even a PowerPoint containing an embedded video.

Regrettably, the 32GB solid-state drive is small, though an SD Card slot provides additional expansion room.

The Iconia Tab W500 has a large bezel, above-average thickness (0.63 inch), and substantial weight (2.14 pounds). The unit's 10.1-inch display runs at 1280-by-800-pixel resolution.

The tablet's curved edges feel comfortable, and the brushed-metal back provides a nice texture that makes the device less slippery. The accurate and responsive capacitive touchscreen supports four-point multitouch.

The nonremovable battery is rated at 3250mAh. It delivered a relatively brief run time of 5 hours, 28 minutes in our battery-life tests.

Unlike Atom Oaktrail chips, the AMD C-50 uses active cooling; but in my use, the fan noise never got distractingly loud.

When you hold the tablet in landscape mode, the air exhaust sits at the unit's top. On the right side is an AC power port. The left side houses a full-size HDMI port, an SD Card slot, the air intake, a volume rocker switch, the power button, an LED that tracks charging, and the headphone port. Along the bottom are guide holes for the keyboard dock, a pair of USB ports,

and a rotation lock switch.

The Iconia Tab W500's keyboard dock avoids any top-heaviness problems by mounting the tablet a little forward and angling the back of the keyboard up. The keyboard dock's chunky back-side makes the package thick, but it also provides a good angle for typing, and it helps prevent the tablet from toppling onto its back.

The keys on this dock, though slightly smaller than full-size, feel uncramped. They are slightly wobbly, however, and the mechanism under them is stiff, causing about 1 in 20 of my key presses not to register.

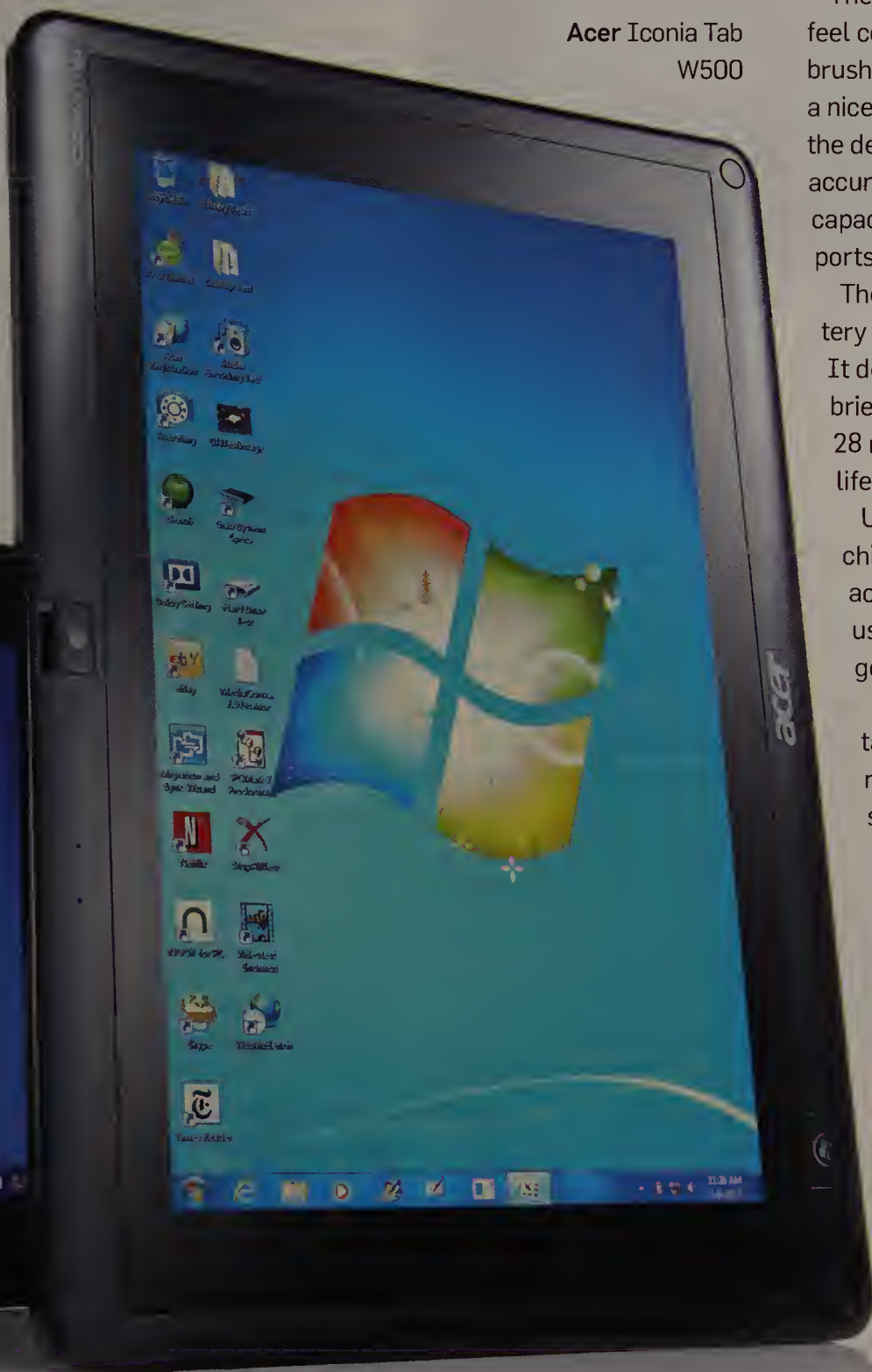
The screen isn't an IPS panel, but you can view it through a range of about 80 degrees in any direction without losing brightness or experiencing color shifting.

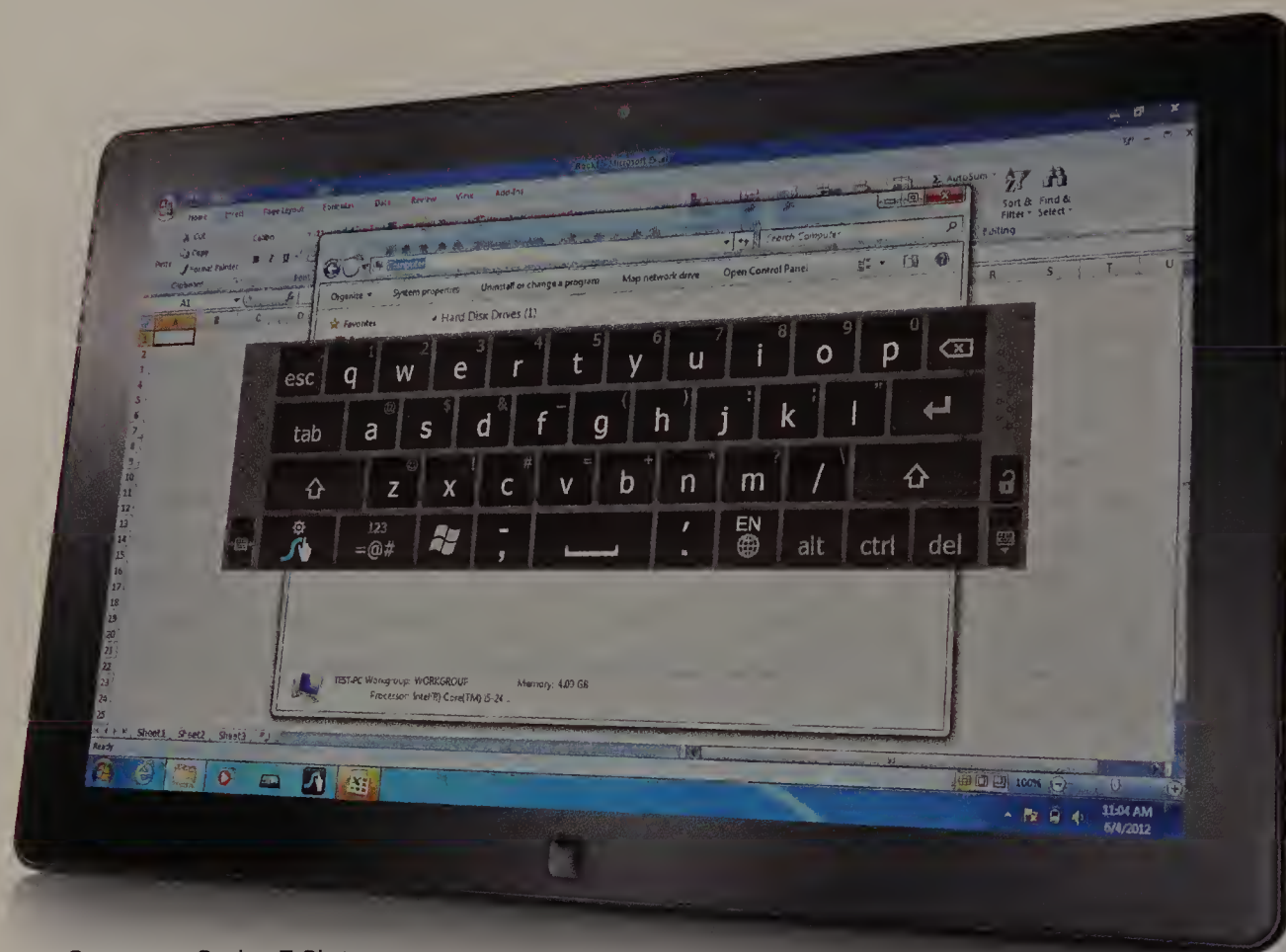
Programs launched swiftly and switching among apps was prompt. Web pages loaded quickly and scrolled smoothly. Video playback was good, too. And though you won't get a lot of bass from a tablet, the Iconia Tab W500 had pleasantly clear and loud speakers.

Unlike Samsung, Acer didn't introduce a full interface overlay to bolster Windows 7's touch deficiencies; instead it included several touch-friendly apps in a suite of software called Acer Ring. When you tap five fingers on the screen, the apps pop up around a ring of shortcuts and utilities; you can select your destination from there.

The ring has a games link,

Acer Iconia Tab W500





Samsung Series 7 Slate

Thanks to its impressive array of powerful components, the Windows 7-based Series 7 Slate is virtually an ultraportable laptop with the keyboard chopped off.

a calculator, a camera app, snipping and syncing tools, and a disk-cleaning utility. ★★★★★; \$499; Acer; find.pcworld.com/73078

Samsung Series 7 Slate

The Samsung Series 7 Slate (\$1350 in the configuration we tested) packs an Intel Core i5 processor and a 128GB solid-state drive. At 0.51 inch thick, it's the thinnest of the six Windows 7 tablets we've tested to date.

Thanks to its dual-core 1.6GHz Core i5 CPU and 1GB of graphics memory, this model is virtually an ultraportable with the keyboard chopped off. The machine

has a generous 4GB of RAM and either a 64GB or a 128GB solid-state drive (we tested the 64GB version).

The 11.6-inch IPS display supports 1366-by-768-pixel resolution. Viewing angles are expansive, and our judges gave the screen high marks for color and contrast.

The touchscreen's responsiveness is great. In my hands-on testing, I experienced no missed taps; and with the larger screen, I could expand the on-screen Windows keyboard to near-touch-typable size. The tablet instantly recognized my swipes and flicks.

The Slate comes in at just under 1.98 pounds, which

isn't light, but the device feels reasonably well balanced for two-handed holding.

The Series 7 Slate carries two cameras: a 3-megapixel camera on the back, and a 2-megapixel forward-facing camera on the front.

On the right side of the tablet's case, you'll find its power button (with a blue LED to indicate charging) and a rotation lock switch. The bottom houses the dock connector and two speakers. On the left side are the AC adapter jack, a Micro HDMI port, a volume rocker, a combination headphone/microphone jack, and a full-size USB port. The top hosts a MicroSD card slot and dual built-in microphones.

One of the Series 7 Slate's distinguishing features is its dual-input Wacom pen and touch digitizer. Though the glossy screen felt quite slip-

perry under the pen, as if I were writing on glass, my writing experience was excellent—and my handwriting looked noticeably better on the Samsung than on the Fujitsu. The touch layer can sense ten touch points, making it useful for any multi-touch applications or scenarios you may encounter.

In our performance tests, this tablet smoked the other Windows 7 tablets we've looked at. Videos looked great, and the speakers were strong enough to fill a room.

The Series 7 Slate's 5520mAh battery kept the tablet running for 5 hours, 35 minutes in the PCWorld Labs' battery tests.

The main drawback of the Series 7 Slate's raw power is the need for a fan to keep it cool. In my use, the fan kicked in at the slightest hint of activity and was distractingly loud in a quiet room. I recommend using the 'silent mode' option to run the fan continuously at low speed. Also, the active fan pushes some pretty warm air out the exhaust vent at the top.

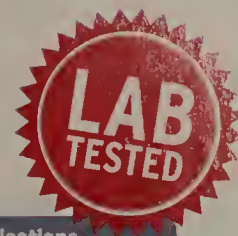
Samsung provides a Touch Launcher overlay to make finger navigation easier. This welcome addition comes up when you tap the home button on the bottom bezel.

In the left third of the screen, a collapsible information panel keeps track of the tablet's battery charge and Wi-Fi status, plus to-do items, time, and weather.

★★★★★; \$1350; Samsung; find.pcworld.com/73079

—Michelle Mastin

Top 10 All-Purpose Laptops



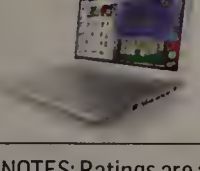
MODEL	Rating	Performance	Features and specifications
1  BEST BUY Dell XPS 14z \$1199 find.pcworld.com/72431	★★★★★ VERY GOOD	• WorldBench 6 score: 136 • WorldBench 6 rating: Superior • Overall design: Very Good • Tested battery life: 5:29	• 2.8GHz Core i7-2640M • 14.0-inch widescreen • 4.4 pounds • 750GB hard drive
► Dell's XPS 14z shows a balanced approach to assembling a thin-and-light, full-featured laptop, but it has only two USB ports.			
2  Asus U46SV \$899 find.pcworld.com/72727	★★★★★ VERY GOOD	• WorldBench 6 score: 123 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 6:41	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.9 pounds • 750GB hard drive
► Though stylish and strong, this all-purpose laptop is a bit heavy—and you must clean out the software bloat to appreciate it fully.			
3  Lenovo ThinkPad T420 \$1249 find.pcworld.com/72209	★★★★★ VERY GOOD	• WorldBench 6 score: 124 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 8:37	• 2.5GHz Core i5-2520M • 14.0-inch widescreen • 5.2 pounds • 500GB hard drive
► The venerable ThinkPad T420's staid countenance belies the machine's outstanding performance, reliability, and features.			
4  MSI X460DX \$849 find.pcworld.com/72432	★★★★★ VERY GOOD	• WorldBench 6 score: 120 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 6:04	• 2.3GHz Core i5-2410M • 14.0-inch widescreen • 4.5 pounds • 500GB hard drive
► The X460DX is a slim yet powerful all-purpose laptop that MSI makes available at a very reasonable price.			
5  Acer Aspire Timeline Ultra M3-581TG \$1499 NEW find.pcworld.com/73026	★★★★★ VERY GOOD	• WorldBench 7 score: 155 • WorldBench 7 rating: Very Good • Overall design: Good • Tested battery life: 8:04	• 1.7GHz Core i7-2637M • 15.6-inch widescreen • 4.5 pounds • 256GB solid-state drive
► The Aspire Timeline Ultra M3-581TG might have been a MacBook killer, if not for its disappointingly poor LCD panel.			
6  HP Pavilion dm4 Beats Edition \$1149 NEW find.pcworld.com/73027	★★★★★ VERY GOOD	• WorldBench 6 score: 120 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 5:23	• 2.5GHz Core i5-2450M • 14.0-inch widescreen • 4.5 pounds • 500GB hard drive
► It lacks high-end graphics performance, but the Pavilion dm4 Beats Edition has great design and sound at a good starting price.			
7  Samsung Series 7 Chronos \$1099 NEW find.pcworld.com/73028	★★★★★ VERY GOOD	• WorldBench 6 score: 118 • WorldBench 6 rating: Good • Overall design: Very Good • Tested battery life: 5:54	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.6 pounds • 750GB hybrid hard drive
► The handsome Series 7 Chronos may be the perfect laptop for Windows users who lust after MacBook Pros.			
8  Lenovo IdeaPad U400 \$840 find.pcworld.com/72728	★★★★★ VERY GOOD	• WorldBench 6 score: 112 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 4:45	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.3 pounds • 750GB hard drive
► You won't find a more stylish or capable all-purpose laptop, but its battery life is unimpressive and it has no Blu-ray option.			
9  Dell Latitude XT3 \$3003 NEW find.pcworld.com/73029	★★★★★ VERY GOOD	• WorldBench 7 score: 108 • WorldBench 7 rating: Good • Overall design: Very Good • Tested battery life: 8:23	• 2.5GHz Core i5-2520M • 13.3-inch touchscreen • 5.2 pounds • 128GB solid-state drive
► The XT3 isn't for most consumers; still, its decent performance, large touchscreen, and great battery life help it get the job done.			
10  Sony VAIO S Series \$1000 find.pcworld.com/72729	★★★★★ VERY GOOD	• WorldBench 6 score: 112 • WorldBench 6 rating: Very Good • Overall design: Good • Tested battery life: 4:51	• 2.4GHz Core i5-2430M • 15.5-inch widescreen • 4.3 pounds • 640GB hard drive
► Sony's VAIO S Series won't win awards for performance or multimedia playback, but it's a great light laptop for professionals.			

CHART NOTES: Ratings are as of 6/5/12. Tested battery life is expressed in hours:minutes. Listed weights do not include the power adapter.



MORE ONLINE Visit find.pcworld.com/73075 to see in-depth reviews, full test results, and detailed specs for each laptop on this chart.

Three Android-Based Media Players Take Different Approaches to Challenging the Dominant iPod Touch

HERE'S A LOOK at three recently released Android-based media players.

Samsung Galaxy Player 4.2

The 8GB Galaxy Player 4.2 (\$200) has a 4.2-inch display and a very thin bezel. The player is thin (at 0.35 inch thick) and light (at just 0.25 pound). However, its lightness makes it feel as if it were composed of cheap plastic, and its glossy black shell is a fingerprint magnet.

The 800-by-480-pixel display doesn't achieve Retina-

display density, but it looks crisp and bright. Adults with average-size hands should be able to reach across to the far corner of the screen without any problem.

This player has dual front-facing speakers—one above and one below the screen, when you hold it in portrait orientation—as well as rear- and front-facing cameras.

The large back panel is removable, affording access to the battery and the MicroSD card slot, but you have to take out the battery in order to reach the card; the fixed

storage (at 8GB, 16GB, or 32GB) is expandable.

The Galaxy Player 4.2 runs Android 2.3.6 Gingerbread, and carries a 1GHz processor and 512MB of RAM. For connectivity, you get Wi-Fi 802.11b/g/n, Bluetooth 3.0, and GPS. Samsung throws in an FM radio, too.

Samsung promises 8 hours of video playback or 60 hours of audio playback between charges of the Galaxy Player 4.2's 1500mAh battery. In my use, however, the battery seemed to be draining faster than that.

The stock headphones include in-ear buds with three sizes of rubber tips.

Though the Galaxy Player 4.2 doesn't have the range of equalizer options that the Walkman Z Series does, it produced strong, clear audio. Even so, its sound was not as rich or full as the Sony's.

The video and audio playback apps on the Galaxy Player 4.2 are easy to use and offer lots of options for organizing and sorting music and videos. You can add new files to the device by plugging in the USB cable and dragging and dropping directly to the device itself or to its MicroSD card if you have one installed. You can purchase music and video files from the Google Play store, or you can stream them from apps such as Pandora and Netflix.

★★★★☆; \$200; Samsung; find.pcworld.com/73042

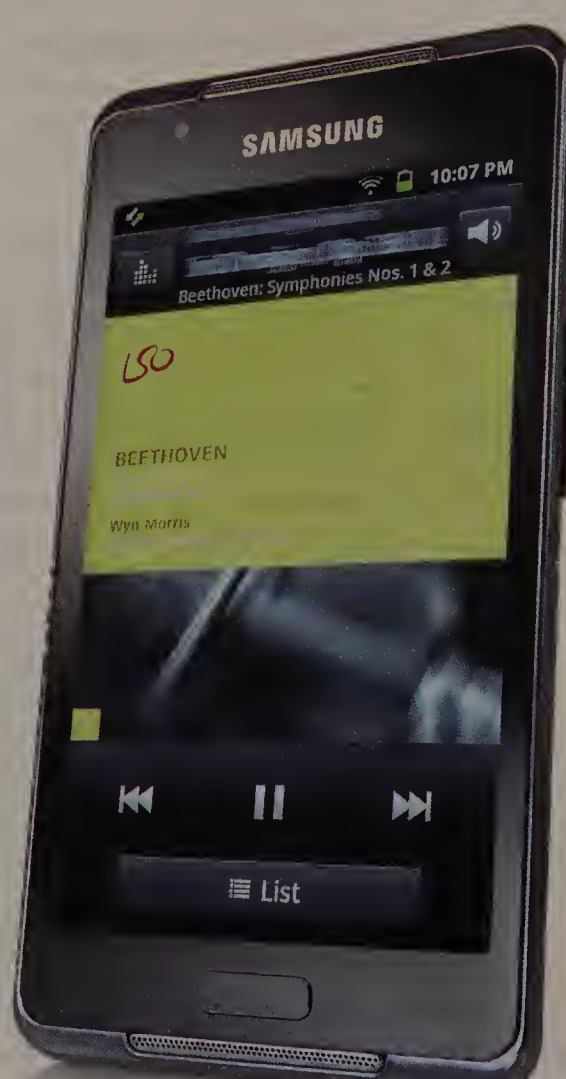
Samsung Galaxy Player 3.6

The Galaxy Player 3.6 (\$150) has a 3.6-inch display and is 0.38 inch thick.

This player's curved edges and slightly textured plastic back are comfortable to hold in one hand. Despite its all-plastic construction, the player feels solid. Unfortunately, its smallish screen has a resolution of just 480 by 320 pixels, yielding relatively fuzzy-looking icons and text. Viewing full web-



Samsung Galaxy Player 3.6



Samsung Galaxy Player 4.2

sites was a frustrating exercise in zooming and panning.

As on the Galaxy Player 4.2, a large removable panel on the back provides access to the device's battery and MicroSD card slot. Though you can expand the 8GB of built-in storage, you must remove the battery to do so.

Also on the back are a 2-megapixel camera and a tiny (but impressively powerful) built-in speaker.

Above the screen, on the front bezel, is a front-facing speaker and a VGA camera. Under the screen are three capacitive buttons, for menu, home, and back.

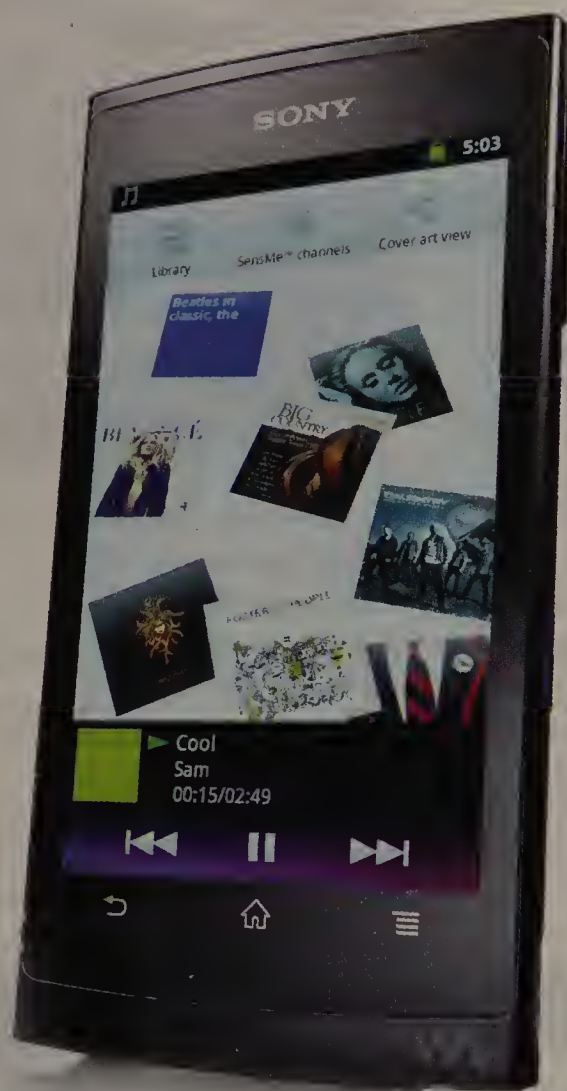
On the right side are the power button and volume rocker; the Micro-USB port, headphone jack, and built-in mic are on the bottom.

The Galaxy Player 3.6 runs Android 2.3 Gingerbread on a 1GHz single-core processor. In use, the player was responsive; I scrolled easily within apps and zoomed in and out of maps without a hitch. Both video and audio playback were smooth.

The device connects via Wi-Fi 802.11b/g/n, and supports Bluetooth 3.0 and GPS. The Galaxy Player 3.6 also has a built-in FM radio.

Though Samsung specs the player's 1500mAh battery for 5 hours of video or 30 hours of audio playback, the battery seemed to drain more quickly than that.

The stock headphones are identical to those on the Galaxy Player 4.2, and offer the same three sizes of rubber tips for the earbuds.



Sony Walkman Z Series

The Galaxy Player 3.6's media playback left something to be desired. Whether through the headphones or over desktop speakers, audio sounded thin and lacked depth and richness.

Video playback suffers from the screen's low resolution and small size.

You can add new files to the device by plugging in the USB cable and then dragging and dropping them to the player itself or to its MicroSD card (if you have one installed). You can buy music and video files from the Google Play store, or you can stream them from apps such as Pandora and Netflix. ★★★★★; \$150; Samsung; find.pcworld.com/73043

Sony Walkman Z Series

The Sony Walkman Z Series (\$210) comes with a 4.3-inch, 800-by-480-pixel-resolution screen. The player weighs 0.34 pound.

The sharp edges and button layout make it a little less friendly for one-handed use. Back, home, and menu capacitive buttons sit on the unit's bezel, below the screen.

In portrait orientation, the power button is on the left side of the top edge; the volume

rocker and the Walkman button are on the right.

Both the headphone jack and the proprietary charging/data port sit on the bottom; the Mini HDMI port is on the bottom of the right edge. On the back are the tiny speakers and a reset button. Since the device's back is not removable, the battery is not user-accessible, making a reset button necessary.

The purple-blue plastic on the back of the Walkman provides a nice contrast to the shiny black of the rest of the device. The design has gentle curves near the top and bottom, for comfortable gripping with two hands in landscape orientation.

Unlike the two Samsung

players, the Walkman lacks a camera altogether.

The Z Series runs Android 2.3.4 Gingerbread, and packs a dual-core 1GHz Tegra 2 processor and 1GB of RAM. As a result, multimedia playback and gaming worked well. The screen is bright and clear, with enough resolution to make games and videos look good.

On the wireless side, you get Wi-Fi 802.11b/g/n as well as Bluetooth with A2DP and AVRCP. The device also has a built-in FM radio.

You'll want to listen to music from this player with headphones. The built-in stereo speakers on the back produced disappointingly weak and muffled sound.

Sony omitted a MicroSD card slot from its player. The Walkman comes in 8GB, 16GB, and 32GB sizes; but on the 8GB model we had for testing, only 4.58GB were free for user storage.

The company promises 5 hours of video playback, and the battery seemed to hold up well in my informal testing. The standby times were great too—enough to let me enjoy several days of casual use without recharging.

Sony's earbuds offer full, rich sound. They aren't especially comfortable to wear, though, and they stick out rather far. The cord to the left bud is shorter than the cord to the right bud, leaving an extra loop of cable to run over the right ear.

★★★★★; \$210; Sony; find.pcworld.com/73044

—Michelle Mastin

Lumix DMC-ZS20: Loaded With Options



THE 14-MEGAPIXEL
Panasonic Lumix
DMC-ZS20 (\$350)

is about as loaded as pocket-size cameras get. Sporting a 20X-optical-zoom (24mm to 480mm) lens, this reasonably priced pocket megazoom offers aperture-priority, shutter-priority, and full manual exposure controls. It shoots full 1080p video at 60 frames per second, too, and it boasts futuristic extras such as 3D still shooting, GPS with mapping,

and continuous-shooting speeds that reach up to 10 fps at full 14-megapixel resolution and 60 fps at 2.5-megapixel resolution.

In Intelligent Auto mode, the ZS20 captured understated photos that earned scores of Good in PCWorld Labs tests of exposure quality, color accuracy, and sharpness; in image distortion, we gave it only a Fair grade.

The ZS20 had Good marks for video and audio. Its 1080p AVCHD clips shot at 60 fps in



our well-lit test setting appeared remarkably smooth, if a little dull and gray in terms of white balance.

At 1.1 inches deep, the camera is bulky enough to have a handgrip, which is rubberized and comfortable.

You can find better overall

image quality elsewhere, but the ZS20's range of shooting options is second to none in its class. Try its scene modes, white balance settings, and creative controls for the best results. —Tim Moynihan

★★★★☆; \$350; Panasonic; find.pcworld.com/73061

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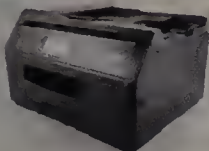
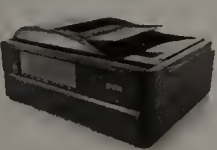
MODEL		Rating	Performance	Features and specifications
1	 Lexmark OfficeEdge Pro5500 \$399 find.pcworld.com/72646 ► A serious challenger to low-end color lasers, this inkjet MFP offers outstanding speed and features, but has pricey standard color inks.	★★★★★ SUPERIOR	- Text quality: Superior - Graphics quality: Very Good - Tested speed: 12.9 ppm text/2.9 ppm graphics	- USB, ethernet, wireless connectivity 300-sheet input, automatic duplexing - Lowest vendor-specified ink cost per page: 1.5 cpp black, 7.9 cpp four-color
2	 Epson WorkForce Pro WP-4540 All-in-One Printer \$400 NEW find.pcworld.com/72731 ► Speed, high paper capacity, and inexpensive inks make this full-featured MFP a nice fit for a busy small office or workgroup.	★★★★★ VERY GOOD	- Text quality: Superior - Graphics quality: Very Good - Tested speed: 12.4 ppm text/2.7 ppm graphics	- USB, ethernet, wireless connectivity 580 sheets total input, auto duplexing - Lowest vendor-specified ink cost per page: 1.6 cpp black, 7.6 cpp four-color
3	 HP Officejet Pro 8600 Plus e-All-in-One Printer \$300 find.pcworld.com/72445 ► The Officejet Pro 8600 Plus is fast, feature-complete, and inexpensive to operate, and it supports legal-size paper throughout.	★★★★★ VERY GOOD	- Text quality: Very Good - Graphics quality: Good - Tested speed: 13.2 ppm text/2.8 ppm graphics	- USB, ethernet, wireless connectivity 250-sheet input, automatic duplexing - Lowest vendor-specified ink cost per page: 1.6 cpp black, 7.2 cpp four-color
4	 Kodak Office Hero 6.1 All-in-One Printer \$200 find.pcworld.com/72643 ► Its ho-hum speed aside, this model is a small- or home-office winner, with full duplex support, cheap inks, and superior photo quality.	★★★★★ VERY GOOD	- Text quality: Very Good - Graphics quality: Very Good - Tested speed: 5.1 ppm text/1.5 ppm graphics	- USB, ethernet, wireless connectivity 200-sheet input, automatic duplexing - Lowest vendor-specified ink cost per page: 2.2 cpp black, 7.1 cpp four-color
5	 BEST BUY Canon Pixma MG5320 \$150 find.pcworld.com/72142 ► CD/DVD printing helps Canon's midpriced Pixma MG5320 stand out in a crowded field. Replacement inks are reasonably priced.	★★★★★ VERY GOOD	- Text quality: Good - Graphics quality: Very Good - Tested speed: 7.7 ppm text/2.4 ppm graphics	- USB, wireless connectivity - Two 150-sheet inputs, auto duplexing - Lowest vendor-specified ink cost per page: 4.7 cpp black, 12.9 cpp four-color
6	 Canon Pixma MG8220 \$300 find.pcworld.com/72644 ► Superior performance and excellent glossy photos somewhat justify the unit and ink prices, but color graphics on plain paper fall short.	★★★★★ VERY GOOD	- Text quality: Very Good - Graphics quality: Very Good - Tested speed: 7.9 ppm text/2.4 ppm graphics	- USB, ethernet, wireless connectivity - Two 150-sheet inputs, auto duplexing - Lowest vendor-specified ink cost per page: 5.1 cpp black, 14.2 cpp four-color
7	 HP OfficeJet 6700 Premium e-All-In-One \$170 NEW find.pcworld.com/72990 ► This small-office MFP is fast, with attractive text and photo output, and a color touchscreen LCD. High-yield inks are affordable.	★★★★★ VERY GOOD	- Text quality: Good - Graphics quality: Very Good - Tested speed: 9.9 ppm text/1.9 ppm graphics	- USB, ethernet, wireless connectivity 250-sheet input, automatic duplexing - Lowest vendor-specified ink cost per page: 3.2 cpp black, 9.0 cpp four-color
8	 Epson WorkForce 845 \$200 find.pcworld.com/72645 ► Lacking only a legal-size scanner platen, this small-office MFP contender has speed, dual input trays, and sharp output.	★★★★★ VERY GOOD	- Text quality: Superior - Graphics quality: Very Good - Tested speed: 11.5 ppm text/1.5 ppm graphics	- USB, ethernet, wireless connectivity - Two 250-sheet inputs, auto duplexing - Lowest vendor-specified ink cost per page: 3.1 cpp black, 11.2 cpp four-color
9	 Canon Pixma MG6220 \$200 find.pcworld.com/72283 ► A space-age-looking touch panel, great output, and speed highlight this competitively priced model; CD/DVD printing is a nice extra.	★★★★★ VERY GOOD	- Text quality: Very Good - Graphics quality: Very Good - Tested speed: 7.8 ppm text/2.5 ppm graphics	- USB, ethernet, wireless connectivity - Two 150-sheet inputs, auto duplexing - Lowest vendor-specified ink cost per page: 5.1 cpp black, 14.2 cpp four-color
10	 Epson Artisan 837 \$300 find.pcworld.com/72284 ► For the home user who wants nearly everything, the Artisan 837 offers a touch control panel, fast photo speeds, and CD/DVD printing.	★★★★★ VERY GOOD	- Text quality: Good - Graphics quality: Good - Tested speed: 7.4 ppm text/3.1 ppm graphics	- USB, ethernet, wireless connectivity 120-sheet input (20 photo), auto duplexing - Lowest vendor-specified ink cost per page: 3.3 cpp black, 9.2 cpp four-color

CHART NOTES: Ratings are as of 5/21/12. ppm = pages per minute; cpp = cents per page.



MORE ONLINE Visit find.pcworld.com/69421 to see in-depth reviews, full test results, and detailed specs for each MFP on this chart.

WordPerfect Office X6 Plays a Specialized Role

COREL WORDPERFECT Office X6 continues a tradition of giving particular groups of users assorted features that they won't find in Microsoft Office, while maintaining compatibility with Office's formats.

The added features in X6, including the ability to create ebooks in the Amazon Kindle .mobi format, aren't jaw-dropping. But the suite has many tweaks that certain users will welcome.

New Applications

WinZip and WinZip Courier (for zipping large email attachments) are now in all editions, and Corel VideoStudio Essentials X4 is in

the \$250 Standard, \$400 Professional, and \$380 Legal editions (but not in the \$100 Home & Student). Existing users are eligible for \$160 and \$260 upgrades of Standard and Pro, respectively.

Along with WordPerfect (word processing), Quattro Pro (spreadsheets), and Presentations, Corel packs in an array of tools, such as WordPerfect Lightning for note-taking, Nuance PaperPort SE for document management, and (in Pro and Legal) Corel PDF Fusion for managing and generating PDFs from multiple file types.

Corel loyalists will continue to tout the control they get from the Reveal Codes

feature, plus WordPerfect's legal-document support, now enhanced by the ability to assign Bates numbering, the most common convention for tracking legal and medical documents.

That said, the suite still lacks a contact manager/organizer à la Outlook (it has Mozilla Thunderbird). And the cluttered interface, with toolbars full of small icons, is starting to look dated.

A Few Glitches

The PDF support still doesn't fully deliver on its promise: For example, when I opened a W9 form, the formatting was so garbled, I couldn't fill it out electronically. How-

ever, I did like the ability to create PDFs at a single click within WordPerfect, Quattro Pro, and Presentations.

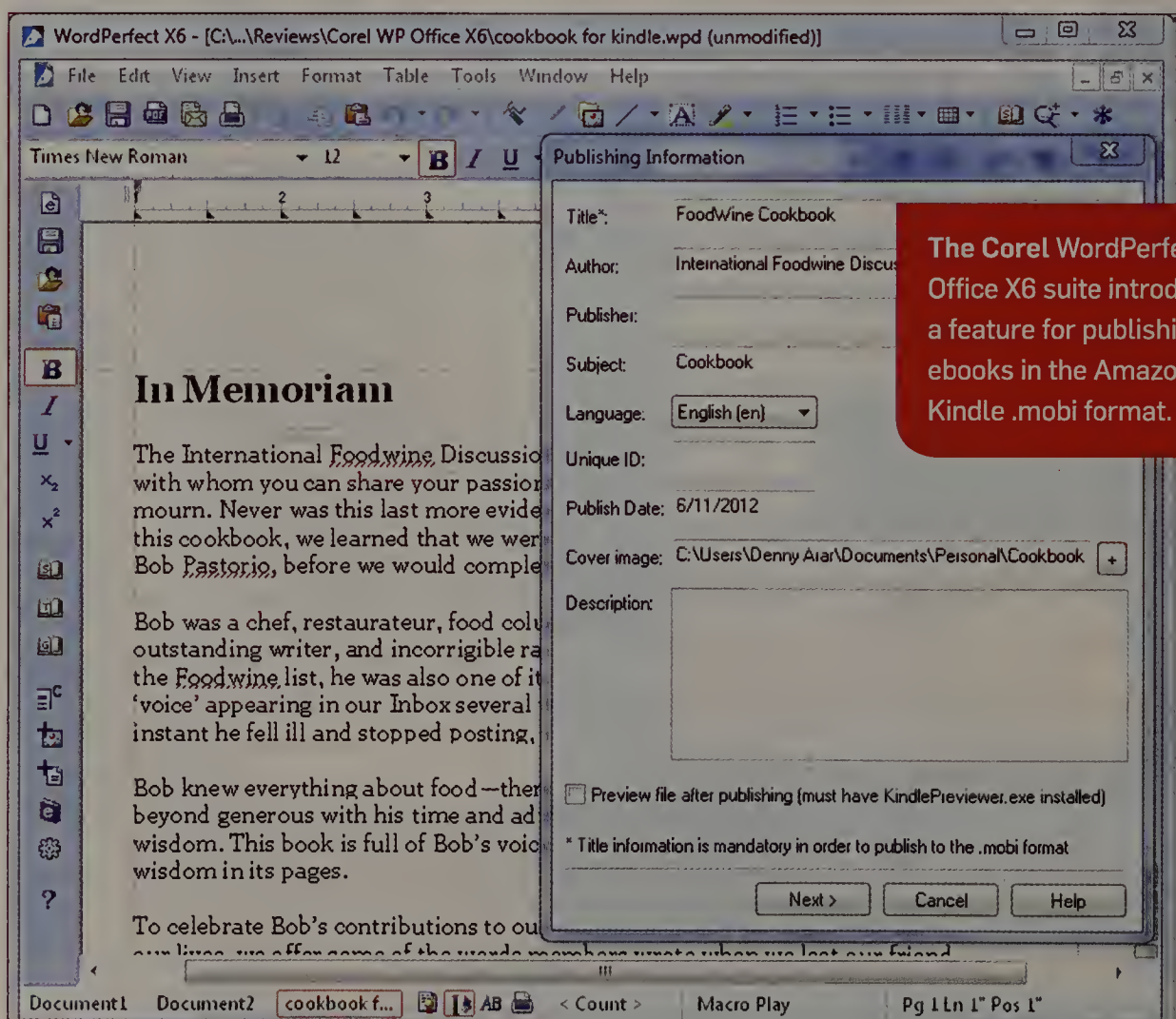
The ebook-publishing feature wasn't as easy to use as I had hoped. The on-screen tutorial was generally helpful; but when I previewed my book, the formatting was off (text did not flow automatically, causing odd line breaks), and I was on my own to solve the problem. Still, the ebook feature holds promise for self-publishers.

Corel hasn't done much with Quattro Pro, Presentations, or Lightning this time around. All three programs are full-featured, but recent versions of Excel and PowerPoint have pulled way ahead in making it easy to add spiffy graphics, and Lightning isn't keeping up with OneNote

features such as SideNote, which lets you add items even when the full application isn't open. Corel's applications seem to be targeting people who prefer toolbars to Microsoft's Ribbon.

WordPerfect Office X6 is a sprawling collection of productivity applications with scattershot functionality. You get a lot of bang for the buck—but unless you prize some of the new features, it's difficult to make a case for switching from Microsoft Office. —Yardena Arar

★★★★☆; \$400 new, \$260 upgrade (Professional); Corel; find.pcworld.com/73055



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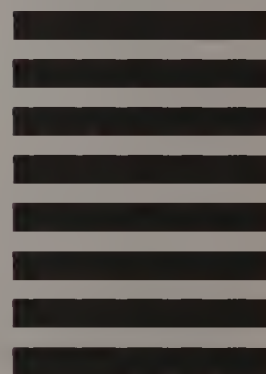
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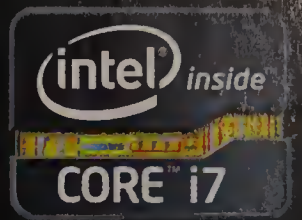
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Live TV Tuner Adds Over-the-Air to Boxee Lineup

THE BOXEE LIVE TV tuner (\$49) integrates over-the-air broadcast TV with the Boxee media streamer's software and features, such as Boxee's program guide and easy access to related content.

About the size of a Wi-Fi adapter, the tuner plugs into one of the two USB ports on a Boxee Box; you attach an antenna or coaxial cable to the other end of the tuner. Once you add Boxee Live to the Box's menu via a software update, you run Boxee Live to perform a channel scan.

If you're using an external



antenna—whether your own or the one that Boxee ships with the tuner—the number of channels you receive will depend on the location of your home and the situation of the antenna. In my tests with a TV located 40 feet from a window, the tuner and its included short antenna picked up only a half-dozen channels; when I hooked the antenna to a 50-foot coaxial cable and placed it next to a window, a new scan found 53 channels. Quality was uneven: Stations with weaker signals sometimes disap-

peared. It's worth noting, too, that the tuner can't do some things, such as pause or rewind live TV.

That said, you can save a lot of money by eliminating monthly cable-service fees and relying on over-the-air TV and streaming Internet media. If you're happy with the quantity of over-the-air TV that you can receive, and if you're already using Boxee for Internet content, \$49 isn't that much to pay for convenience. —Yardena Arar ★★★★★; \$49; Boxee; find.pcworld.com/73058

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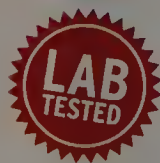
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GeForce GTX 670: Good Price, Great Results



NVIDIA'S GTX 670 offers performance as good as or better than that of last

year's high-end GTX 580, while consuming less power. At roughly \$399, it's not a budget graphics card, but it is affordable for users looking for robust PC gaming on HD-resolution displays.

In the 3DMark 2011 benchmark, it easily bested the GTX 580 as well as both current high-end GPUs from AMD, the Radeon HD 7950

and the Radeon HD 7970.

Across our collection of five DirectX 11 test games, the GTX 670 averaged a frame rate of 62 frames per second, essentially finishing in a dead heat with the pricier Radeon HD 7970.

Under full load—measured when running 3DMark 2011 at very high resolutions and with all features maxed—the GTX 670 ranked as the most power-efficient card of the four, though the Radeon HD 7950 was just a step behind.



The standard GTX 670 is surprisingly compact, and it should fit in most midsize-tower cases, even those lacking the depth to handle some higher-end cards.

Power-supply requirements

are modest: A good 500W unit should do the trick.

If you already have a GTX 580 or a similar high-end card, switching to a GTX 670 is probably not beneficial. If you have an older card, however, it may be well worth the investment. —Loyd Case

★★★★★; \$399; Nvidia; find.pcworld.com/73059



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MediaSuite 10 Ultra: Complete Multimedia Editing

CYBERLINK MEDIASUITE 10 Ultra (\$130 for new users and a \$70 upgrade) is the latest flagship version of CyberLink's multimedia editing, playback, and conversion suite. Its components consist of the biggest names in the company's impressive portfolio, such as PowerDVD 12 and PowerDirector 10.

Efficient Design

MediaSuite 10's new central launcher is far more slick than those of previous versions. The look is reminiscent of Microsoft's Metro interface (which suggests that CyberLink will be all over Windows 8).

You can access the modules via a list of the tasks they perform, or by their names. In general, the modules are simple to use, though not so easy to learn. CyberLink loves tiny icons, and curious interface choices appear throughout; however, compared with its two main rivals in the suite game—Nero and Roxio—MediaSuite 10 is a breeze to navigate.

Although MediaSuite 10 has many new features, the most salient is its suite-wide support for 3D video and photos. If you've been keeping track of the component programs, that probably isn't news to you; PowerDVD 12, for instance, acquired 3D capabilities a while ago.

PowerDVD 12 plays every

major type of video, including 3D Blu-ray, and it has a ton of enhancements. It's also a competent photo and music organizer. PowerDirector 10 is an excellent consumer-level video editor with multiple video tracks, effects, automatic formatting, full hardware-acceleration support, and lots of editing tools. PowerProducer 5.5, the companion to PowerDirector, serves to burn that application's output to disc. Both programs fully support AVCHD, Blu-ray, and 3D.

As for the other applications in the package, the photo-oriented MediaShow 6 makes it easy to create slide shows, touch up images, and interact with online social media. You can import pho-

tos from Facebook, Flickr, and YouTube into a slideshow, and the program can automatically add a soundtrack and handle transitions for you if you're in a hurry.

MediaEspresso 6 is a nice little converter that handles various formats and devices. I was pleasantly surprised to find that the program could convert and optimize photos, video, and music automatically for my rarely supported HTC HD7 Windows Phone 7 handset. Of course, the tool also supports Android and iOS phones and tablets.

Missing Formats

If I have any gripe to register against MediaSuite 10, it's that none of the modules support DirectShow filters,

so you can't play anything that MediaSuite 10's applications don't natively support. They support quite a few, but FLAC and the OGG Theora video format are missing. Less critical, but also absent, is support for RealMedia and some Apple formats.

MediaSuite 10 Ultra's only real competition these days is Roxio Creator 2012 (\$80), but Roxio has nothing to match PowerDVD 12's playback capabilities. As CyberLink alternatively describes it, this suite is an "11-in-1 Digital Media Value Pack." Now if the company would only add that darn DirectShow support. —Jon L. Jacobi ★★★★★; \$130 new, \$70 upgrade; CyberLink; find.pcworld.com/73060



One program in the suite, MediaShow 6, lets you import from social media.

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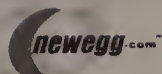


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Hard Disk Manager 12: Powerful Storage Tools

PARAGON'S HARD DISK Manager 12 Professional (\$100) is a comprehensive toolset for hard drives.

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to CD, converting the file system, and wiping. You can do the same operations with entire disks, and you can back up and restore individual files and folders. Support for virtual machines is included

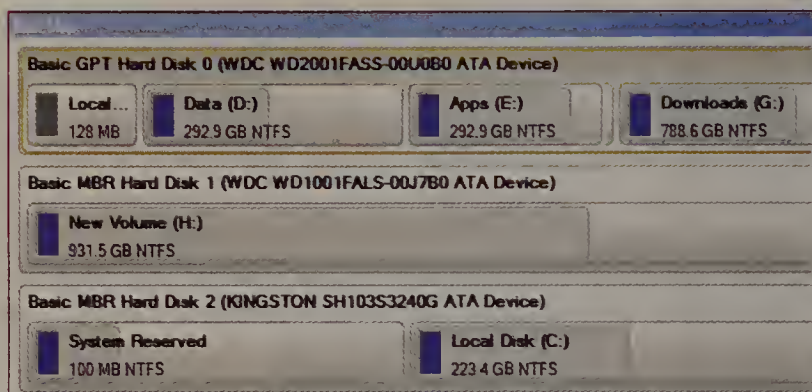
as well. See find.pcworld.com/73057 for a features comparison between the Pro edition and the \$50 Suite version.

I love the fairly straightforward, everything-under-one-roof interface; using it is more convenient than jumping between modules. I also like the fact that you define a series of actions, and then set them in motion with the Apply button. But I'd rather see standard Windows file dialog boxes, which are easier to use than Paragon's boxes.

For version 12, Paragon is touting a new imaging en-

gine. I found HDM 12 to be not only fast but also noninterfering; in fact, I wrote the majority of this review with the program humming away in the background, and I forgot that it was running.

Backup, virtual machines, partitioning, conversion—Hard Drive Manager 12 Professional is powerful. It is a bit pricey for the average user, though, so check out the aforementioned Suite version too. —Jon L. Jacobi ★★★★★; \$100 (Professional); Paragon Software; find.pcworld.com/73056



In Hard Disk Manager 12, you can easily wrangle drive partitions.

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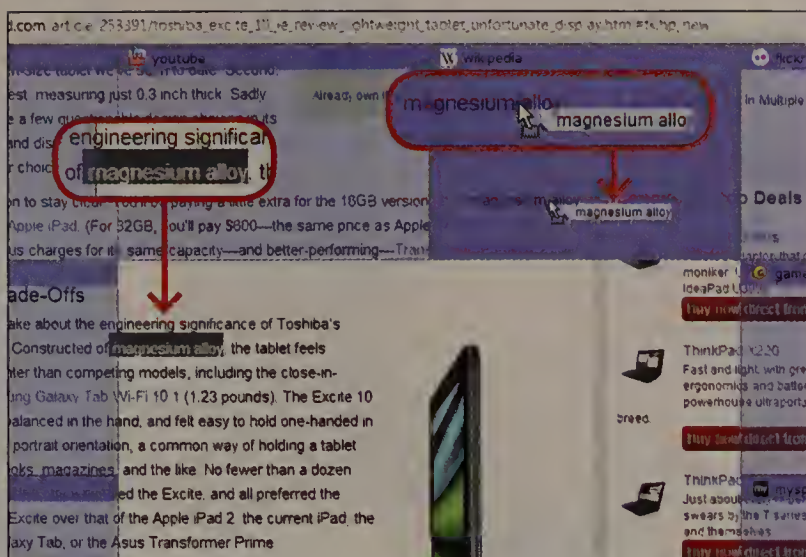


THE FREE CHROME extension Drag and Drop Search provides an elegant way to

deal with a common hassle: searching for information on a particular engine or website. With Drag and Drop Search installed, you need only select a term and then drag and drop it onto the name of the search engine or site you wish to use.

Drag and Drop Search overlays your window with a four-by-four grid. By default, the center of the grid is clear, and the shaded cells on the perimeter are each assigned to a different site or search engine, such as Delicious, Twitter, and Wikipedia. Select any word or term on the current page, start dragging, and the grid appears. When you drop the term on the cell for the site you want to search, it opens in a background tab.

The extension has a configuration pane for customizing your list of engines, but it's bare-bones. You need to be fairly familiar with the URLs of search engines and sites to use it.



Drag and Drop Search helps you search sites for a string of text.

The basic mechanism of Drag and Drop Search is brilliant. It is easy and fast to use, and the click-and-drag gesture translates well to a touch interface. Even in the tool's current simple state, it is a useful Chrome extension. —Erez Zukerman

★★★★☆; free; Henry Bai; find.pcworld.com/73041

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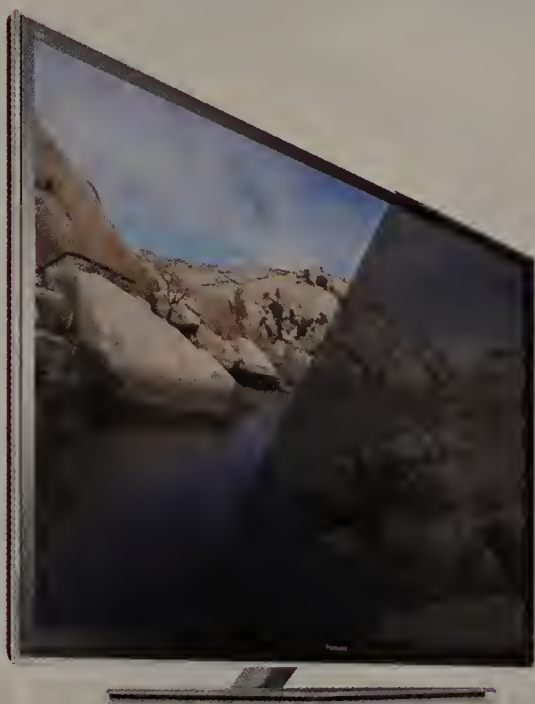
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Plasma HDTV

Panasonic VT Series

NO TV MAKER takes plasma sets as seriously as Panasonic does. If you like the deep blacks and smooth motion that plasma TVs can provide, you will love the VT series (65-inch model, \$3700; 55-inch model, \$2500), which also features multitasking apps and a smaller energy footprint. find.pcworld.com/73015

Android Phone

Samsung Galaxy S III

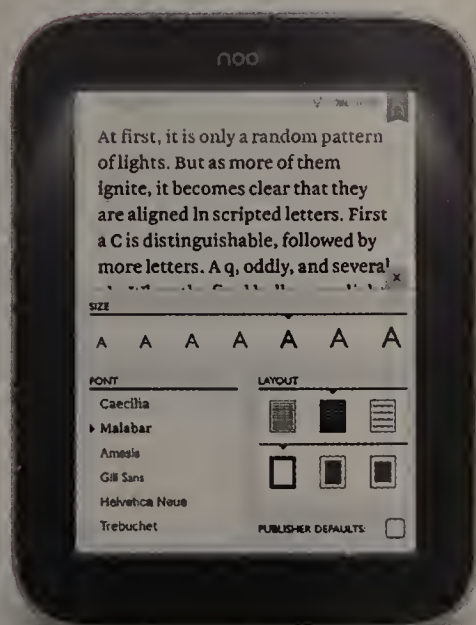
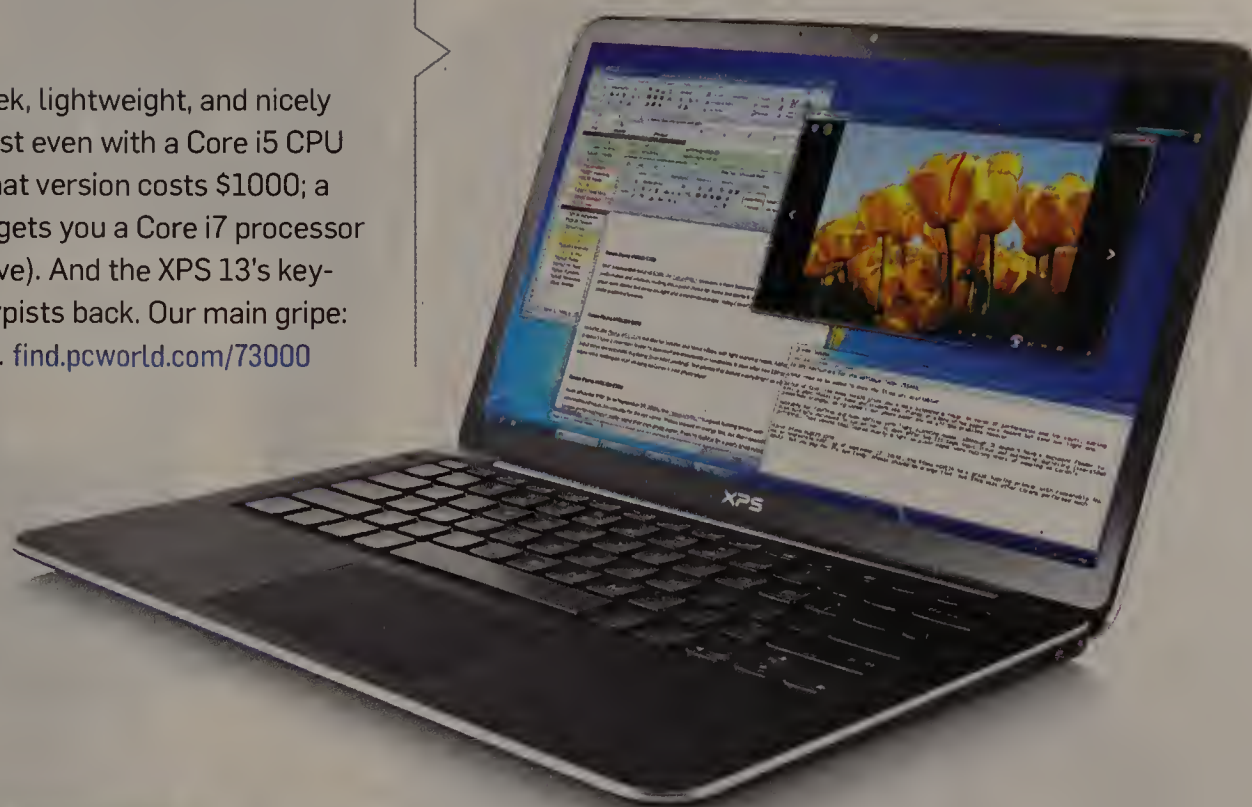
Talking into your phone is so last century. These days, we spend most of our time looking at them—and the Galaxy S III's huge, 4.8-inch screen gives you a lot to look at. Despite its big display, the S III manages to be relatively light, with a cool, textured feel. And the phone's advanced processor makes Android and your apps very responsive. find.pcworld.com/73006



Ultrabook

Dell XPS 13

Dell's first Ultrabook is sleek, lightweight, and nicely rigid. In our tests, it was fast even with a Core i5 CPU and integrated graphics (that version costs \$1000; a few hundred dollars more gets you a Core i7 processor and a larger solid-state drive). And the XPS 13's keyboard won't hold speedy typists back. Our main gripe: The screen could be better. find.pcworld.com/73000



E-Reader

Barnes & Noble Nook Simple Touch With GlowLight

It's amazing that e-reader makers took so long to realize that people like to read in bed, but at last they seem to have figured it out. Barnes & Noble's GlowLight feature is elegantly simple: The adjustable LED light illuminates the reading area, yet it won't keep your partner awake. And the reader itself (\$140) is light and easy to hold for hours. find.pcworld.com/73010 >>

Graphics Board

Nvidia GeForce GTX 680

The first graphics board that incorporates Nvidia's Kepler architecture, the GeForce GTX 680 (\$500) delivered fantastic performance in our tests while drawing less power and making less noise than comparable cards. find.pcworld.com/73014



24-Inch Monitor

HP ZR2440w

The HP ZR2440w (\$425) provides a full complement of ergonomic adjustments and an assortment of input options, including DVI, HDMI, and DisplayPort. But the proof is in the display—and the ZR2440w doesn't disappoint there either. Our jury of testers rated this monitor at the top of its category on virtually every test we performed. find.pcworld.com/73013



\$200 Camera

Canon PowerShot SX230 HS

The Canon PowerShot SX230 HS combines great image quality, versatility, and extra features at a phenomenal price. This 14X-optical-zoom (28mm to 392mm) pocket camera offers top-notch photo quality, plus manual shutter and aperture controls. It captures stills at 8 shots per second in burst mode and video at 24 frames per second, with in-camera geotagging. find.pcworld.com/72997

Home Printer

HP Photosmart 5520 e-All-in-One Printer

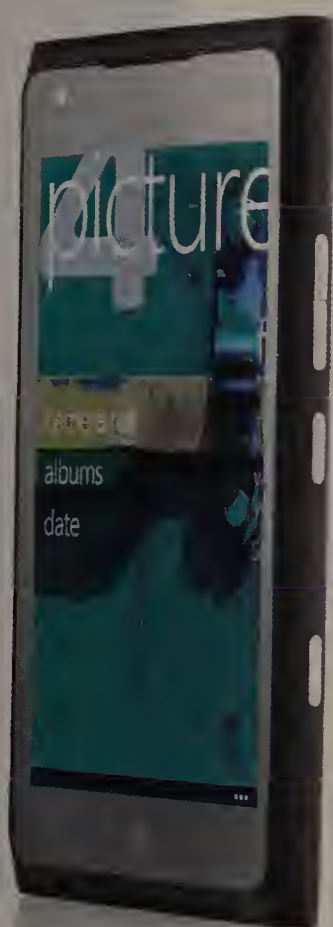
Printers are utilitarian, but that doesn't mean they can't be sophisticated and stylish. You control the HP Photosmart 5520 e-All-in-One Printer (\$129) by way of a nifty touchpad, and it has an attractive low-slung, black-slab look. Other benefits of this multifunction unit: It can print on both sides of a page, and its ink prices won't drive you crazy. find.pcworld.com/73011



Windows Phone

Nokia Lumia 900

Few people use Windows Phone 7, but that's not because it's a bad OS. Its colorful Metro interface makes getting around your phone simple and fun. And the Lumia 900 (\$100 with a two-year AT&T contract) brings a beautiful display, an accomplished camera, and LTE data speeds to the table. find.pcworld.com/73008



Gaming Desktop PC

Maingear Shift Super Stock

For gamers, it doesn't get any better than the Maingear Shift Super Stock. (Of course, it doesn't get much pricier, either: The machine we reviewed cost nearly \$8000.) The Shift Super Stock is blazing-fast, naturally, offering blistering frame rates even on demanding games played at their highest quality settings. The PC also sports a large, gorgeous case that permits efficient cooling and affords easy access for tinkering. find.pcworld.com/73005 >>



Camera Phone

T-Mobile MyTouch 4G Slide

With zero shutter lag, a back-side illuminated sensor, and useful specialized modes (panorama, macro, and burst), the MyTouch 4G Slide's camera is as advanced as many point-and-shoots. Can a phone really produce great-looking images? The MyTouch 4G Slide can. (The phone costs \$200 with a two-year contract.) find.pcworld.com/73007

All-in-One PC

HP Z1

Most all-in-one PCs are about convenience, not performance. HP's Z1 is an exception. This pricey workstation (the version we reviewed sells for \$5673) includes an Intel Xeon processor, 16GB of RAM, and an Nvidia Quadro 4000M graphics board. With a WorldBench 7 score of 159, the Z1 finished far ahead of any other all-in-one we've tested. And you can open up the Z1 and swap out components—try that with any other all-in-one on the market. find.pcworld.com/73003



Tablet

Apple iPad

Surprised at this choice? Of course not. Apple's tablets have been well ahead of the competition ever since there's been any competition. The latest iPad (which starts at \$499) isn't a revolutionary advance; but its crisp, high-resolution display and option for a 4G connection help it put yet more daylight between itself and every other tablet. find.pcworld.com/73009



\$800 Camera

Sony Alpha SLT-A57

The 16-megapixel APS-C-sensor-equipped Sony Alpha SLT-A57 isn't a true digital SLR (it has a fixed translucent mirror and lacks an optical viewfinder). But its features beat those of many mid-range DSLRs, starting with a continuous shooting speed of 12 frames per second at 8-megapixel resolution, with the camera's phase-detection autofocus enabled. That's faster than any camera in its class (and many more-expensive models); factor in the A57's 1080p video recording at 60 fps, and you have the most feature-packed camera south of \$1000. find.pcworld.com/72999

Business Printer

Samsung CLP-775ND

If you work in a busy office, the last thing you want to do is wait for the printer to produce output. The Samsung CLP-775ND color laser printer (\$750) prints both text and photos swiftly. With a 500-sheet main tray, it won't force you to intervene constantly to reload paper. And with relatively low per-page printing costs, this model won't waste your money either. find.pcworld.com/73012 >>





LCD HDTV

Samsung ES8000 Series

We haven't been able to test the latest lines of HDTVs yet, but Samsung's LCD TVs have consistently been top performers, and the ES8000 Series (\$3000 to \$4400) looks similarly strong. The TVs' remotes accept voice and gesture controls, and their superthin bezels make the screens almost edgeless. find.pcworld.com/73016

Gaming Laptop

Origin EON17-S

There's nothing subtle about the Origin EON17-S: It has a large case, a strong fan, and a weight in excess of 11 pounds with its power brick. But that big package pays off with big power. The Core i7 CPU can run as high as 4.5GHz in Turbo Boost mode, and the \$3442 laptop we reviewed turned in astonishing numbers on our benchmark tests. find.pcworld.com/73001 ●





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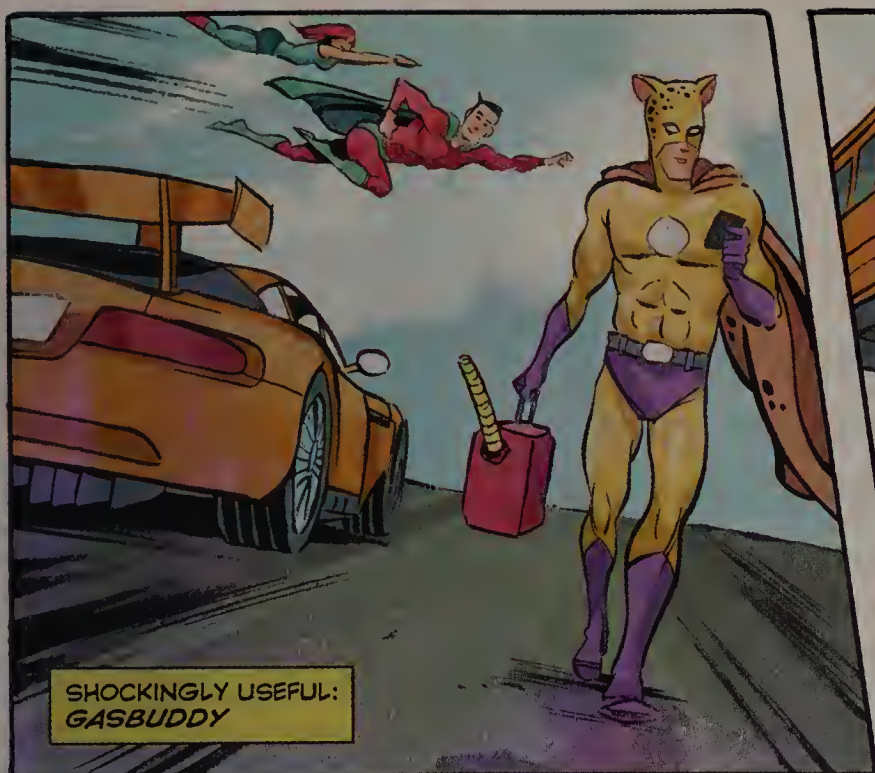
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ILLUSTRATION BY KAGAN McLEOD



SHOCKINGLY USEFUL:
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JUST FOR FUN:
TWEETBOT



THE REPLACEMENTS:
ASSISTANT



NOTEWORTHY NEWS APPS:
POCKET



READY FOR BUSINESS:
GOODREADER



POCKET ARCADE:
INFINITY BLADE 2

Shockingly Useful

From a clock that helps you wake up to a tool that locates good deals on gas, these apps will revolutionize how you live your daily life.

Any.Do (free)   More than a to-do list, Any.Do integrates with your calendars to remind you of meetings, and it syncs with your Google Tasks account so you'll always know what you need to get done. The app will even remind you to call people back if you missed their calls. You can drag and drop tasks, and you can add tasks by typing them in or by speaking them into the microphone.

GasBuddy (free)   Though gas prices keep going up, your paycheck stays the same. Luckily, GasBuddy can help you get the best deal in town. The app compares the prices in your area

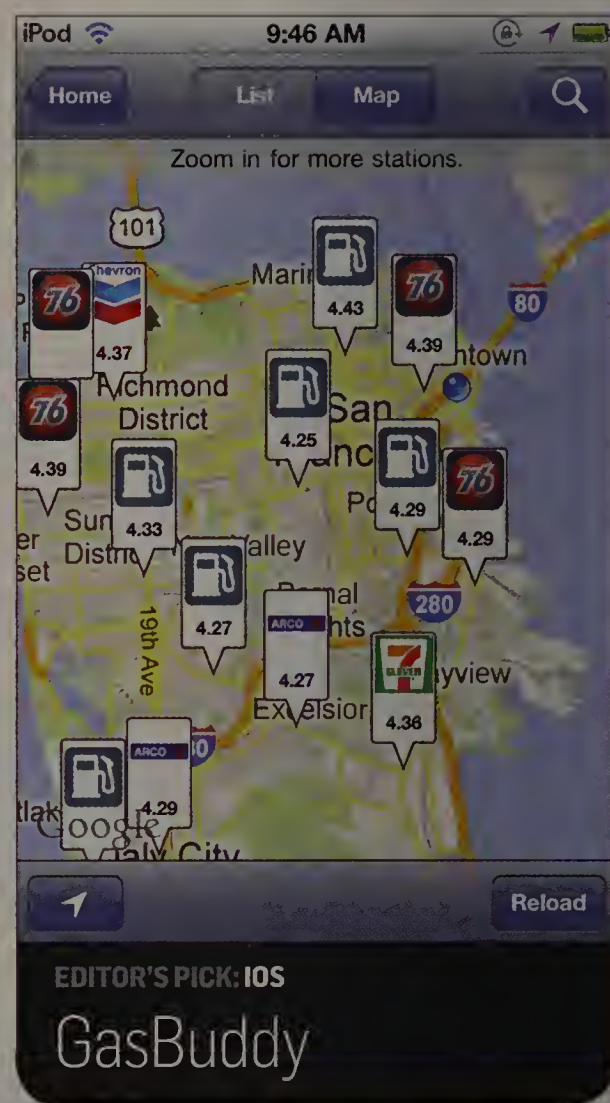
and points you toward the station with the lowest rates. You can help out by reporting gas prices to the GasBuddy website, ensuring that everyone has a chance to save cash while filling up. (For additional car apps, see page 23.)

SayHi Translate (\$1)  Ditch your aging English-to-Spanish dictionary, and check out SayHi Translate. Set the language you want and speak into your phone's mic, and the app will translate your words. The tool covers 32 languages, so you should have no problem asking where the bathroom is, no matter what country you're in.

Smart Tools (\$2.50)  Need a flashlight? How about a compass or a light meter? Smart Tools turns your phone into those things and more. The app has more than 15 tools that can help in various situations, such as when you are measuring objects or determining whether a shelf is level. And the developer is constantly adding new tools.

Lookout Mobile Security (free)   The only antivirus tool you'll ever need for your Android phone, Lookout Mobile Security scans apps to confirm that they are malware-free, and it will help you locate your phone if the device goes missing. A paid version (\$3 a month or \$30 a year) also blocks phishing websites and tells you which apps have access to sensitive data. Note: The iOS version will track your lost phone, but it lacks malware scanning.

Alarm Clock Ultra (\$3)  Have trouble waking up? With the alarms and timers in Alarm Clock Ultra, you might never be tardy again. If you tend to hit the snooze button, the app has a mode in which you must solve puzzles before you can shut the alarm off, ensuring

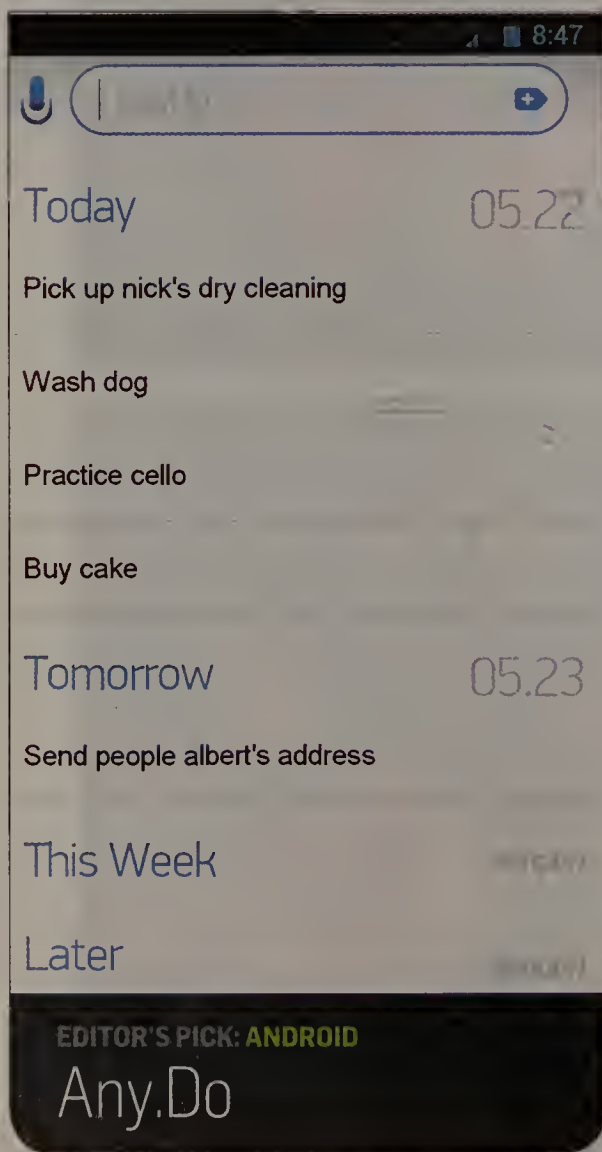


that you stay alert. A free version is available, if you wish to try the app first.

Bump (free)   With Bump, you can send data between two phones by "bumping" them together. The bumped phones establish a temporary link, enabling you to share contact details and photos, or to recommend installed apps to the other party. Both handsets must run the Bump app for the connection to work, but it's easy and fun to use.

Dropbox (free)   Dropbox offers one of the simplest ways to sync your files across multiple devices, and it lets you move documents on and off phones without having to plug them into a computer. If you want to have your photos always at hand, you can set the app to upload pictures you take directly to your Dropbox account, making them available to you across all your devices.

For links to all eight of these shockingly useful tools, see find.pcworld.com/73049.



Just for Fun

These apps will help you stave off boredom, whether you're into taking and sharing photos or looking for something to do nearby.

Turntable.fm (free)   Do you think you have what it takes to be a DJ? Turntable.fm puts you in a room with four other DJs, all competing for the crowd's affections. You create your own playlist (by searching for songs within Turntable's extensive catalog) and take turns playing music for the room. The other Turntable.fm members in the crowd indicate whether they like or dislike the song currently playing. Too many dislikes, and your song is skipped.

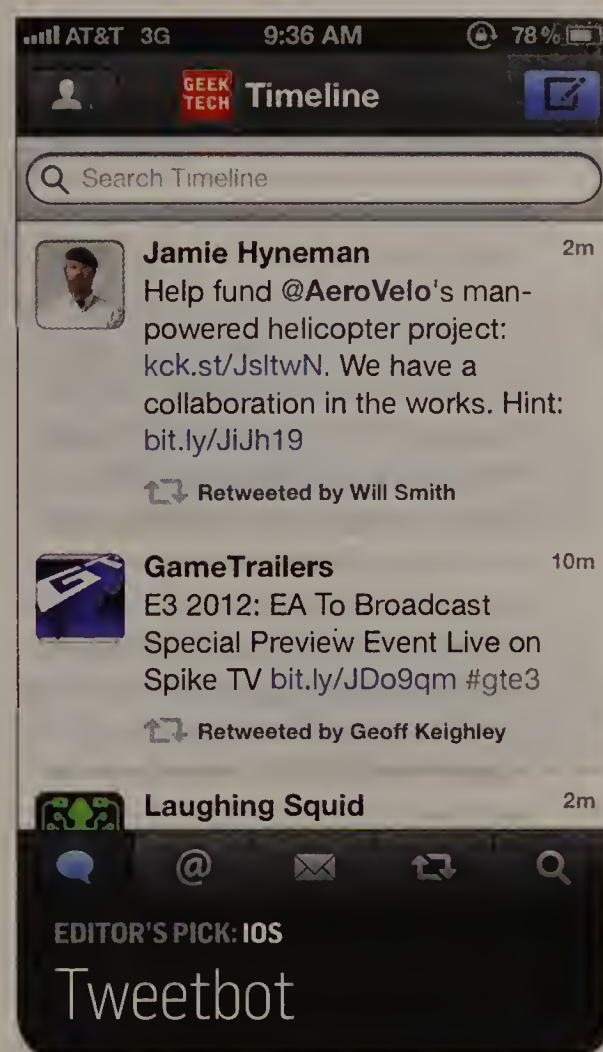
Tweetbot (\$3)  If we had to choose a favorite Twitter client for iOS, Tweetbot would be it. Already have the official

Twitter app? No problem: Tweetbot will import your accounts and automatically set them up the first time you launch it. Tweetbot allows you to use gestures to easily keep track of Twitter conversations, and it lets you mute tweets from specific users or tweets carrying particular hashtags (#YOLO, anyone?). Just like the official Twitter app, Tweetbot supports multiple Twitter accounts and can open most images and Web pages within the app itself. Once you've tried Tweetbot, you'll wonder why you ever bothered with any other Twitter app.

Snapseed (\$5)  If you want to make your photos pop, check out Snapseed on the iPhone. This simple yet powerful photo editor enables you to touch up your images quickly, using simple gestures. You can adjust a photo's colors, lighting, and focus, all with just a few swipes of your finger. Once you're done editing a picture, you can share it via Facebook, Flickr, or Twitter, or just save it to your phone's gallery.

AfterFocus (free)  Another powerful yet easy-to-use photo-editing app, AfterFocus allows you to adjust the focus in your pictures after you have taken them. You just highlight the area where you wish to improve the focus, adjust the intensity, and presto: You have a great-looking image that looks as if you had taken it with a DSLR. After tweaking your photo, you have the option of applying a filter to it and sharing your masterpiece on Facebook, Flickr, Instagram, or Twitter.

StumbleUpon (free)   The ultimate time killer, StumbleUpon lets you "stumble" through Web pages that relate to your interests. The more you stumble and rate pages, the better



StumbleUpon becomes at unearthing content that you'll like. If you encounter a particularly juicy page, you can submit it to StumbleUpon so that other users can enjoy it as well. The app is great for discovering new websites and keeping up with the latest happenings on topics you care about.

Friendcaster for Facebook (free)  The official Facebook app is horrendous: It constantly hangs, it sometimes crashes, and it occasionally decides that it doesn't feel like logging you in. Fortunately, Friendcaster for Facebook gives you a much more stable way of browsing Facebook while you're on the go. The app lets you do everything from viewing your newsfeed to posting photos on your friends' walls. Friendcaster offers a slight amount of customizability, too, so you'll be able to change the theme of the app and the order in which you see the navigation icons in the main menu. One added benefit for owners of Android 4.0 (Ice Cream Sandwich)



phones is that Friendcaster permits you to sync your Facebook contacts with the contacts in your address book—a feature sorely missing from the official Facebook app on Android 4.0.

Viddy (free)  Often dubbed “Instagram for videos,” Viddy lets you capture a 15-second clip and apply effects to it to create a more artistic look. The app provides different types of effects and filters, and part of the fun is experimenting to see which one makes your video look its best. You can share the finished video with friends on Facebook and Twitter, or with people who follow you on Viddy’s own social network, which currently boasts 26 million users.

Banjo (free)  Wondering what your friends are up to? With Banjo, you can see which of your buddies are nearby and available for meeting up. The app uses your Facebook, Foursquare, Instagram, and Twitter accounts to scan where your friends are checking in, and it displays that data on Google Maps. Banjo will even help you avoid people you don’t want to see by notifying you when a particular person is close to your location. The one drawback is that the app can put a strain on your phone’s battery, so you would be wise to stay near a power outlet if you plan to use it for long periods of time.

Schemer (free)  If you’re undecided about what to do this weekend, check Schemer, an app that suggests activities in your area based on your interests. Most activities are things that other Schemer users have suggested, but you’ll also find recommendations from sources such as the Food Network, National Geographic, and 7x7. If you’re especially fond of a particular activity, you can share it with the entire Schemer community and with your Google+ circles. Say good-bye to boring weekends, and start scheming.

For links to all nine of these entertainment apps, see find.pcworld.com/73050.

The Replacements

Love your phone but hate the mail app? Wish the camera had more features? These apps make your handset’s built-in tools obsolete.

Assistant (free)  Move over, Siri. This virtual assistant (represented by a customizable on-screen avatar) can do everything from composing email to telling jokes. Speak your request, and Assistant does the rest. Each update to the app adds more functionality, so before long you may be able to command your phone entirely with your voice.

GroupMe (free)  Anyone who has ever tried to organize a bunch of friends knows how much of a hassle it can be. With GroupMe you can create group chats where you can message multiple people all at once and better

coordinate your efforts. All members of the group chat can see everyone else’s responses, so no one is out of the loop.

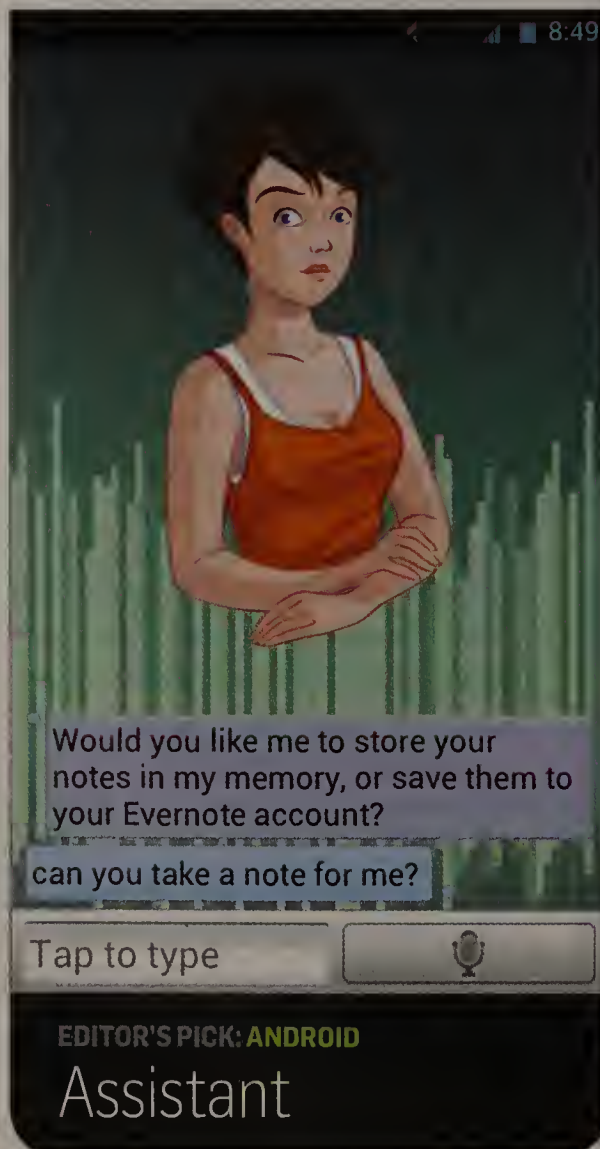
Waze (free)  Never be stuck in a traffic jam again. Waze gives turn-by-turn directions and relies on its community of users to plot the fastest course to your destination. For instance, if a user reports a delay due to an accident, Waze will reroute you to bypass most (or all) of the resulting mess. Waze is a useful tool to have, especially if you’re looking for a free GPS navigation app.

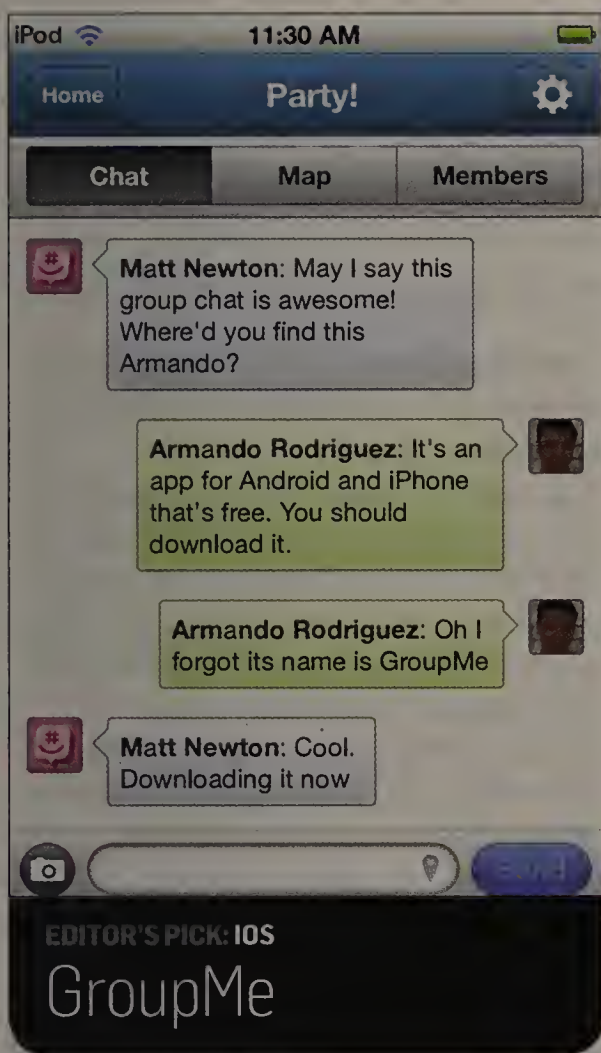
Camera+ (\$1)  Why settle for the iPhone’s built-in camera software?

Camera+ has all of the regular features, as well as a few extras. You can choose from four shooting modes (Normal, Stabilizer, Timer, and Burst), and you can touch up photos you take within the app in the “Lightbox.” Camera+ also lets you share photos on Facebook and Twitter.

Opera Mini (free)  By compressing Web-page data before it reaches your device, Opera Mini loads pages faster than traditional mobile browsers do. This approach reduces the amount of data you consume while browsing, too. And since Opera Mini can sync with the desktop version of Opera, you’ll always have your bookmarks and history available.

K-9 Mail (free)  Android’s built-in Gmail app is good, but only if you have a Gmail account. If you don’t, try K-9 Mail. This open-source app supports POP, IMAP, and Exchange, and has downloadable plug-ins that add functionality. You can use multi-





ple email accounts at once, and see all of your messages in the unified inbox.

Sparrow (\$3) iOS Sparrow provides a slick way to check your email. It doesn't support push notifications, but it does handle multiple email accounts, and it can connect to your Facebook account to attach photos to your friends' email addresses. One advantage that it has over the iOS Mail app is in presentation: It lets you flick through messages as you would pieces of paper, and it color-codes email based on labels you apply.

DoubleTwist (free) Android Want to use your phone as your primary media player? DoubleTwist is right up your alley. It organizes the music on your SD Card and lets you rate and create playlists of your tracks. Unlike the built-in Android Music app, DoubleTwist permits you to browse and stream podcasts, and also lets you listen to Internet radio stations.

For links to all eight of these capable replacements, see find.pcworld.com/73051.

Noteworthy News Apps

Here are several apps that let you consume news your way—giving you more of what you care about, and less of what you don't.

Pocket (free) Android iOS Formerly Read It Later, Pocket lets you save practically anything you can find online for offline viewing. The app makes articles easier to read, and it works with other apps such as Flipboard, Twitter, and Zite. Pocket is ideal for catching up on news during your commute or while you're on a flight with no data connection.

Zite (free) Android iOS Using your Google Reader or Twitter account, Zite builds a magazine based on your interests. You can add sections by selecting from a preset list of topics or by searching for a topic. The app becomes smarter the more you use it, learning about what you like to read. You can save any story for later by sending it to your Evernote, Instapaper, or Pocket account.

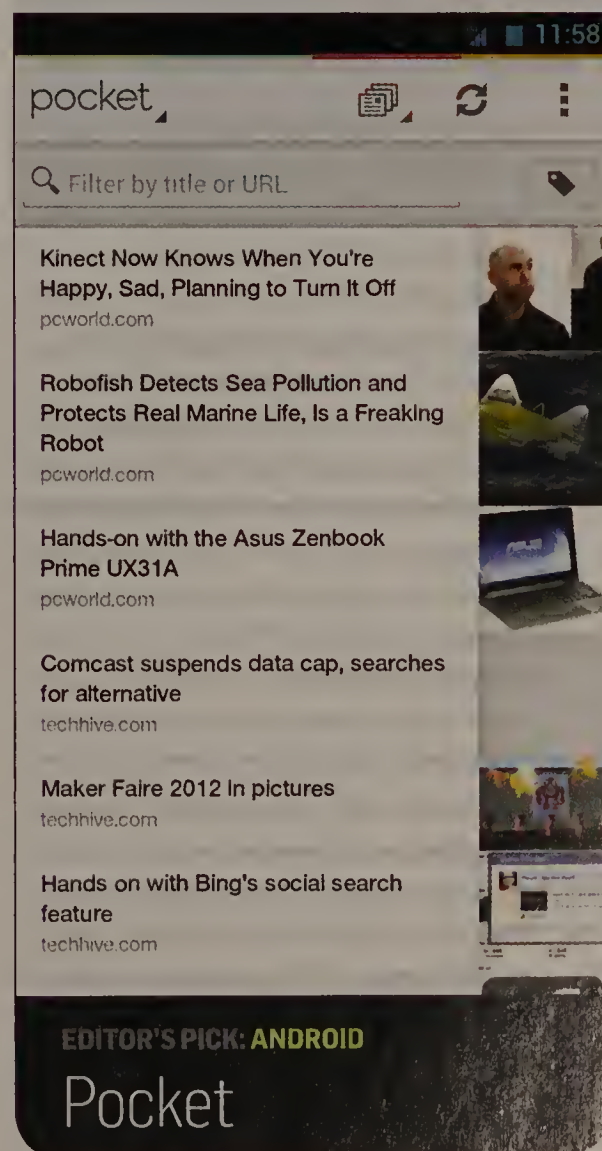
Stitcher (free) Android iOS With more than 10,000 podcasts and radio shows to choose from on Stitcher, you're bound to find something you like. The app can suggest stations based on topics you care about. For example, if you're following the 2012 presidential election, you'll appreciate Stitcher's Election Center, where you can see which political issues are trending and hear podcasts that mention them.

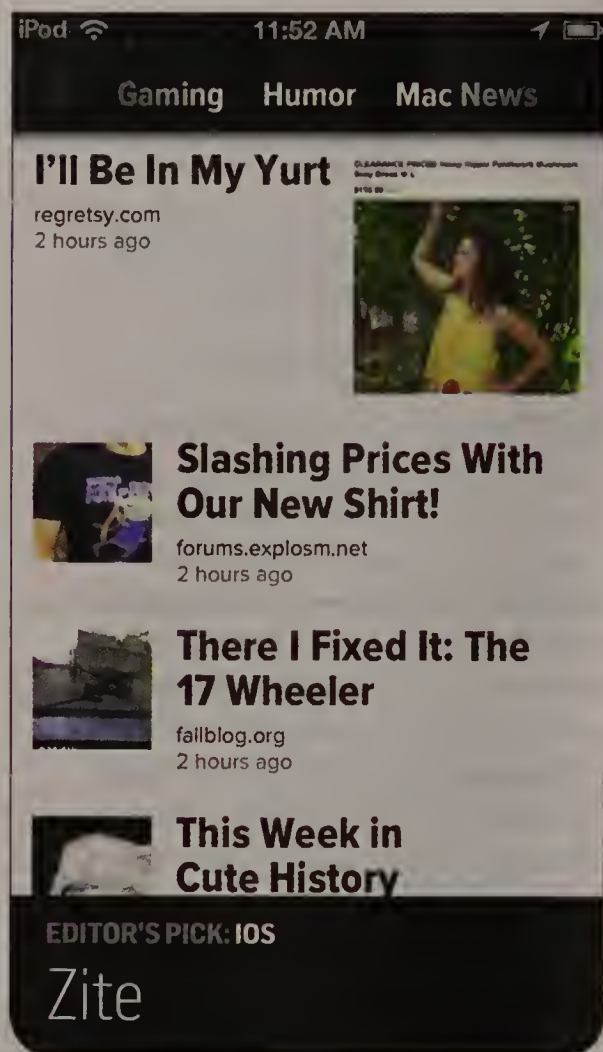
1Weather (free) Android The attractive 1Weather has more features than you can shake a windsock at. The app shows local conditions, forecasts for the week and for the next few hours, severe-weather alerts, and even the current lunar phase. Animations add to its charm, and an included widget displays a ton of information at a glance.

Flipboard (free) iOS In contrast to the magazine-style tablet version of Flip-

board, the relatively new iPhone incarnation feels like a notepad full of interesting articles and captivating photos. It connects to your social media accounts and RSS feeds, aggregating that information, so you can browse your news and your Facebook feed without having to switch apps.

Instapaper (\$3) Android (\$5) iOS Like Pocket, Instapaper is great for reading articles when you lack Net access. You can view items posted by Facebook or Twitter pals, or the articles that most Instapaper >>





users are reading. Since many other apps support Instapaper, you should have no trouble adding pages and articles to your Instapaper account.

Pulse (free) Big on RSS feeds? You can import your Google Reader account into Pulse, or manually add feeds using the app's built-in search. The minimalistic design lets you browse headlines quickly, and clicking a story produces a clean version that's easier to read on a phone. You can also organize and group your feeds.

Taptu (free) Like Pulse, Taptu helps you read and subscribe to RSS feeds. You can import your Google Reader account or browse the Stream-Store to find interesting feeds. If you have several feeds on the same topic, the DJ feature can merge them for easier consumption. You can share your streams via social networks, too.

For links to all eight of these noteworthy news apps, see find.pcworld.com/73052.

Ready for Business

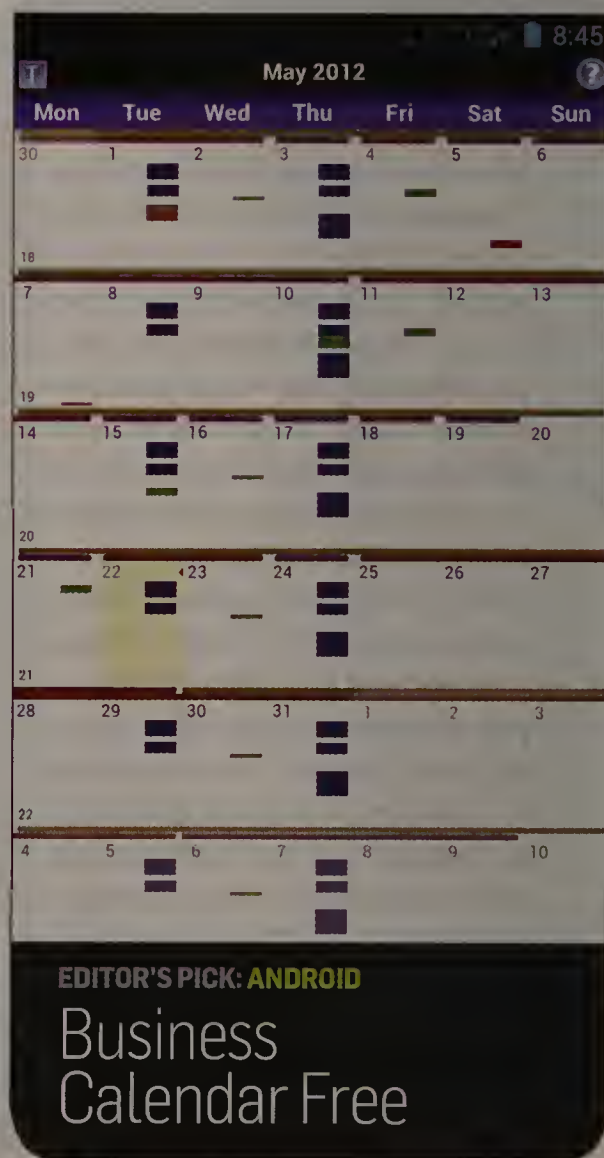
With this collection of apps, you can manage meetings, sign contracts, track expenses, and perhaps even depart from work early.

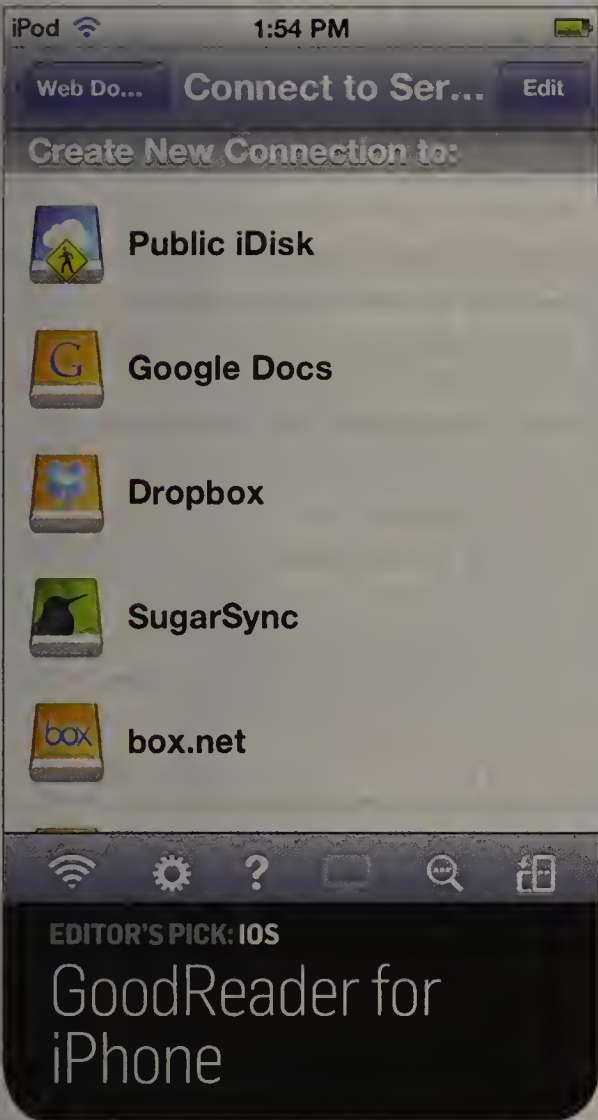
Business Calendar Free (free) In handling multiple calendars, Business Calendar Free blows the regular Android calendar app out of the water. This tool works seamlessly with Google Calendar, and it automatically imports all calendars tied to your accounts. The app's clean presentation makes it easy to see when you have an event coming up, and you can quickly set appointment reminders. Several included customizable widgets can display a specific calendar or events—handy for checking your schedule at a glance. The creators also offer an ad-free version for \$5.

GoodReader for iPhone (\$5) The versatile GoodReader can handle more than just PDF files; it can also open .txt files, Word documents, and pretty much anything else you throw at it. Like the Adobe Reader app (see the next page), GoodReader will allow you to mark up PDFs with notes and comments. Unlike the Adobe Reader app, GoodReader can also import documents from your Google Docs account, Dropbox, Box.net, or any number of server types. You can even set the app to sync the changes you make to the imported documents, so your files are always up-to-date.

Google Drive (free) Formerly the Google Docs app, Google Drive gives you easy access to the entire contents of your Drive while you're out and about. That means you can access not only your Google Docs files but also anything else that you've uploaded to Google's cloud storage. In addition, you can use the app to upload files to your Drive, or create brand-new ones in Google Docs. You can share your Docs items with other people, and collaborate on the files in real time.

OneReceipt (free) Tracking digital receipts can be a hassle: You can easily lose them within the confines of your inbox, and they can quickly accumulate if you frequently shop online. OneReceipt organizes your digital receipts and helps you manage your paper ones as well—use the iPhone's camera to take a picture of a paper receipt, and the app will digitize the information for quick lookup. The service also scans your email inbox for receipts from online stores, alerts you when your product has shipped, and provides a monthly summary that tells you how much you are spending.





mSecure Password Manager (\$10)

 Security is a major concern for any business, especially when it comes to safeguarding passwords. mSecure Password Manager provides a safe place to store your sensitive passwords, acting as a vault for all of your login information. It keeps your stored data encrypted and locked away from prying eyes, and you can set the app to back up the data to mSecure's cloud. The app also provides a built-in password generator for locking down your online accounts more effectively.

Adobe Reader (free)

Both Android and iOS can view PDFs natively, but neither OS lets you do much with them. Through the Adobe Reader app, you can both view and edit PDFs. You can leave comments, add bookmarks, and even use the freehand tool to mark up documents as you see fit. The app's best feature, though, gives you the ability to fill out simple forms and sign your

documents digitally. You'll no longer have to waste paper and time printing a document just to fill it out.

LinkedIn (free)   The social network for professionals, LinkedIn offers an app for Android and iOS that does more than help you stay up-to-date with your connections. The news section, for instance, delivers the hottest stories of the day related to topics that you follow;

the stories open within the app's browser, and you can share any article you're reading with your LinkedIn network.

The app also lets you sync your LinkedIn contacts with those in your address book, so you can easily get in touch with them whenever you need to.

For links to all seven of these business-ready tools, see find.pcworld.com/73053.

Pocket Arcade

It doesn't matter whether you favor blasting zombies or slamming pigs—the following games are sure to suit everyone's tastes.

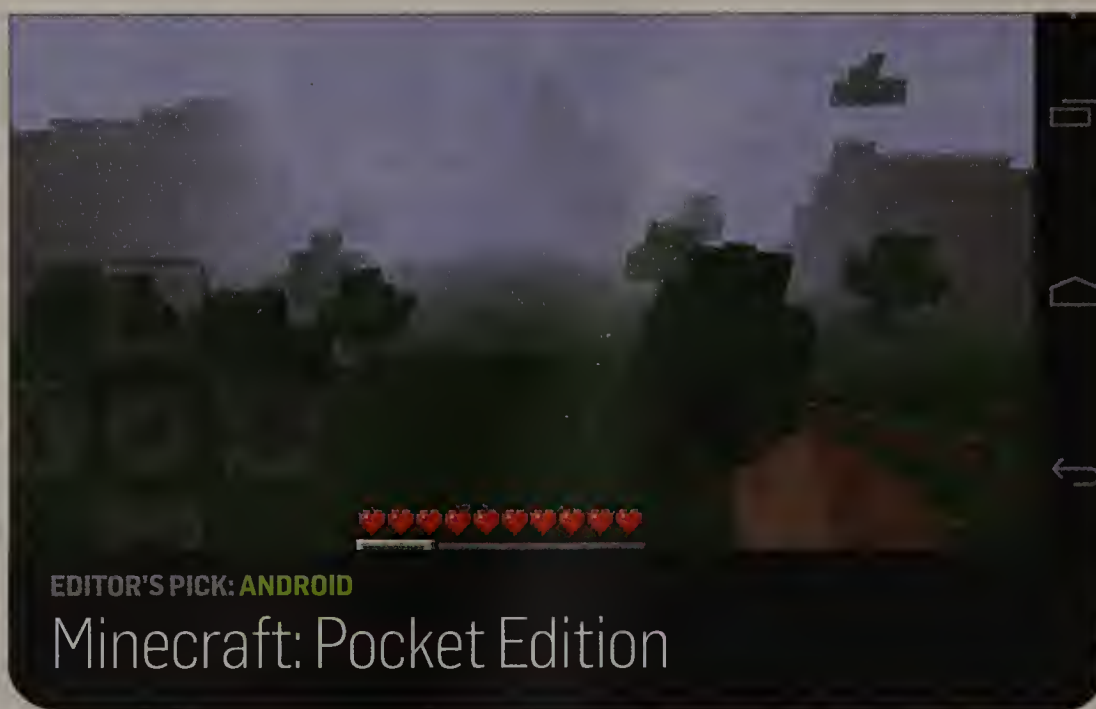
Minecraft: Pocket Edition (\$7)   If you can dream it, you can build it in Minecraft: Pocket Edition. The game features two modes: a survival mode similar to the desktop version of the game, and a creative mode where you can build as you please without fear of attack. The survival mode drops you in the middle of a map filled with random animals and enemies looking to hurt you or mess up your buildings. The creative mode is much less stressful, and gives you an infinite supply of resources to build pretty much anything you want. A multiplayer mode is available too, so you and a friend can join forces to create something truly amazing.

Infinity Blade 2 (\$7)  Infinity Blade 2 picks up right where its predecessor left off. The graphics have improved, as have the story and gameplay. You now get more weapons, plus three styles of fighting to use in defeating foes. In the multiplayer mode, you can work with other combatants to complete challenges and earn rewards. If you loved the original Infinity Blade, you'll enjoy everything that the sequel has to offer.

Angry Birds Space (free)   Just when we were getting tired of flinging birds at swine, developer Rovio

decided to change the rules of the game. Angry Birds Space takes everything you knew about Angry Birds and throws it out the window. You're still catapulting flightless fowl at green pigs, but now you have to contend with complicating factors such as gravity fields and other space-themed obstacles. The levels aren't the only thing that's new: The game also adds a handful of new birds, each with its own special power. So get your slingshot ready, and start smashing some pigs (in space).

SpellTower (\$2)  In SpellTower, you use letters to spell out words for points. Like Triple Town (see the next page), this game is easy to pick up but difficult to master. Each of the four different modes has its own set of rules, but one rule remains the same throughout: You can use each word only once. Although that restriction isn't much of a problem in the Tower and Puzzle modes, where you aren't timed, it makes Rush Mode—where letters are constantly filling the screen, and you have to prevent them from reaching the top—a mad dash to stay alive. The game also has a local multiplayer mode, where you can challenge other people on iPhones or iPads to determine who can acquire >>



the most points in a short amount of time. Better keep those dictionaries handy—you're going to need them.

Canabalt (\$3)   Timing is everything in Canabalt. Your only goal is to run as fast and as far as you can, without plummeting to your death or crashing into obstacles. The faster your well-dressed character goes, the more difficult it is for you to avoid missing a jump and running headfirst into a wall (resulting in your instant demise). It's fun to challenge yourself to go farther and beat your friends' high scores;

you'll definitely want to keep playing, no matter how many times you expire.

Triple Town (free)   At first glance Triple Town looks childish and easy, but that deceptive simplicity is what makes the game so addictive. Your task is to build a town by grouping items in sets of three. Once you've grouped items of the same type, they fuse to form a new item of higher rank. For example, planting three bushes will cause them to fuse into a tree. The higher the rank of an item, the more points you get for it. What

makes the game so tricky is that you have a finite amount of space on the game grid, and you have to deal with bears that block your progress. It's amazingly easy to find yourself sucked in, so don't be surprised if you lose a few hours of your day to this game.

Draw Something (free)   If ever there was a game that lived up to its name, this would be it. Draw Something plays much the way Pictionary does: You choose a word from a cluster, and then draw a representation of that word as best you can. The person you are playing with then tries to guess what word you're attempting to draw, earning coins that they can use to purchase in-game colors and bombs to help solve drawings faster. The real fun of this title comes from seeing how creative people can get in their drawings. Even those of us who can barely draw a straight line have been known to pull off some amazing-looking pictures.

Hero Academy (free)  If you are looking for a challenge, give Hero Academy a try. In this cross between chess and collectable card games, you'll need to be a decent strategist to defeat some of the more seasoned players. It has no single-player mode, so all of your opponents are real people attempting to take down your heroes. You start off with one team of heroes, but you can obtain more through in-app purchases. Each team has its own strengths and weaknesses, and each has assorted characters that you use in combat.

For links to all eight of these great mobile games, see find.pcworld.com/73054. ●

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From the editors of **PCWorld**

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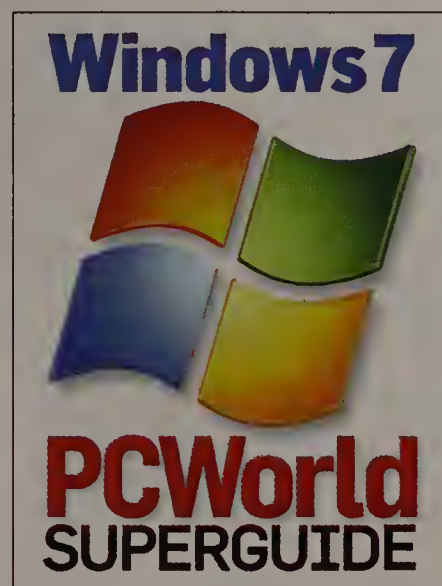
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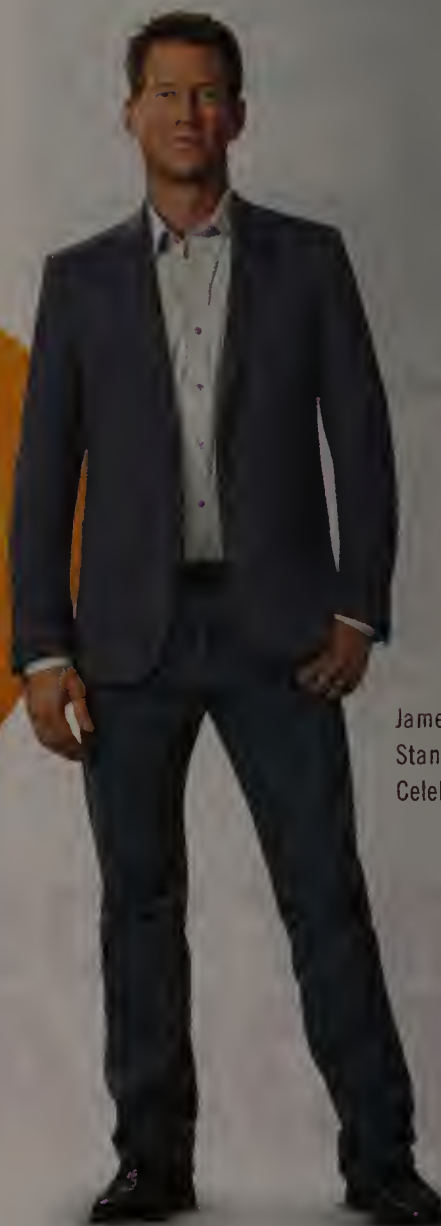
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James Denton, Stand Up To Cancer ambassador, has helped family members navigate their cancer treatment. Stand Up To Cancer is a program of the Entertainment Industry Foundation (EIF), a 501(c)(3) charitable organization.



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BY MARK SULLIVAN

Data Snatchers!

The Booming Market for Your Online Identity

A huge, mostly hidden industry is raking in billions collecting, analyzing, and sharing personal information you put on the Web.

Should you be worried? »

Make no mistake,

your personal data isn't your own. When you update your Facebook page, "Like" something on a website, apply for a credit card, click on an ad, listen to an MP3, or comment on a YouTube video, you are feeding a huge and growing beast with an insatiable appetite for your personal data, a beast that always craves more. Virtually every piece of personal information that you provide online (and much that you provide offline) will end up being bought and sold, segmented, packaged, analyzed, repackaged, and sold again.

The "personal data economy" comprises a menagerie of advertisers, marketers, ad networks, data brokers, website publishers, social networks, and online tracking and targeting companies, for all of which the main currency—what they buy, sell, and trade—is personal data.

Their databases pull user information from a long list of sources—everything from birth certificates to browsing history to Facebook "Likes"—and they're becoming better at finding patterns in the data that predict what you might do or buy in the future. A child born in 2012 will leave a data footprint detailed enough to assemble a day-by-day, even a minute-by-minute, account of his or her entire life, online and offline, from birth until death.

And the databases that collect this information are increasingly hyperconnected—they can trade data about you in milliseconds.

Facebook, to many, is the face of the personal data economy. Facebook's entire business is aggregating the personal data that its users give at the site. Today, Facebook uses that mountain of personal data to help advertisers target ads on the Facebook site. However, as many observers have said, Face-

book's investors are likely to pressure the now-public company to look for new ways to "monetize" its personal data.

"We're accepting more privacy intrusions each day, sometimes because we don't realize what we're giving out, other times because we don't feel we have a choice, other times because the harm of this isolated transaction seems so remote," says privacy attorney Sarah Downey, who works for personal data security products company Abine.

She adds, "Once collected, our data ends up in unexpected—and unwanted—places, and spam emails, inclusion in harmful information databases, and even identity theft can follow."

In the following pages I'll try to add to the personal data economy story by describing some of the latest trends in personal data collection and analysis—the combination of online and offline data, hyperconnectivity and real-time ad targeting, browser fingerprinting and tracking, and finally the new methods of analyzing huge databases of consumer information.

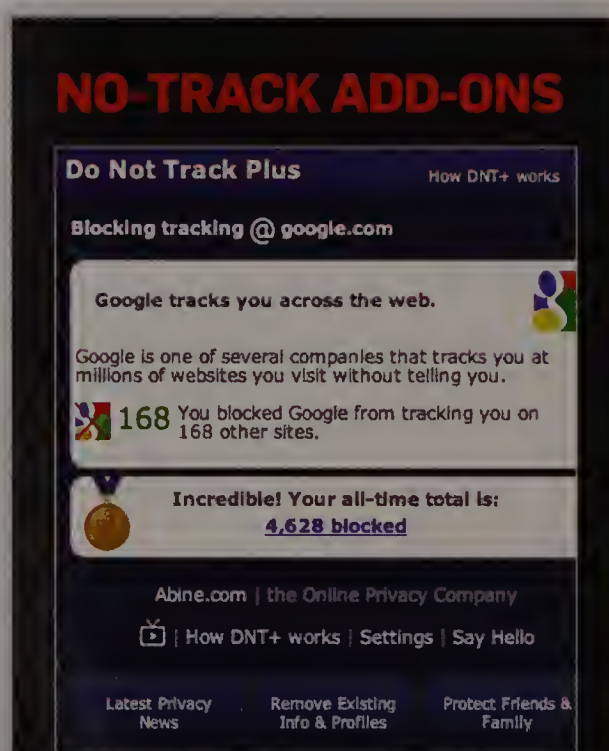
Combining Online and Offline Data

Personal data has become far easier to access and aggregate than it used to be. Long before we started cataloging our lives

on the Internet, much of the information about us lived in hard-copy public records documents at the city hall or the county courthouse. Those public records, which include birth data, real estate records, criminal records, political affiliation and voting records, and more, have in recent years been scanned, digitized, and otherwise fed into databases. That data is now being combined with our online personal data.

A whole industry of public records data companies has sprung up to aggregate public records data from every city, county, and state in the union, and to make the data easily available online (for a price). Some of these firms, like Intelius.com and Spokeo, are combining public records data (originally created offline, in the physical world) with online data (information that we give out via the Internet), such as personal data from social networks.

Spokeo aggregates data taken from social media and networking sites, and it augments user profiles with public records data, the com-



Third-party products such as Abine's excellent Do Not Track Plus browser extension block cookies in real time from third parties like ad networks and data aggregators. (Go to find.pcworld.com/73080 for the download of DNT+, which works based on the privacy suggestions of Abine.) An icon shows how many companies are gathering your personal data at the site you're visiting.

pany's chief strategy officer, Emanuel Pleitez, tells me.

Intelius Inc., which owns Intelius.com and other "people search" sites, has begun augmenting its core public records data product by adding social network data to its user profiles. "It's an area we're moving in now," says Jim Adler, chief privacy officer and general manager of data systems at Intelius.

He adds, "Our job is to pull data together from whatever sources are available. If it's publicly available, we'll use it."

Today Intelius is capturing only the most basic information from Facebook, Twitter, and other social networks—names, ages, and where a person has lived. But

housing, gainful employment, or various types of insurance."

And in truth, the public records sites would have no way of knowing if this happened—and may not want to know.

Add social networking info, and an employer or landlord could get a more nuanced (but potentially misleading) picture of a person. Here, data from two parts of a person's life is being accessed—public records, formal and open, and social networking data, informal and intended for "friends." An applicant for a job, a housing rental, or insurance would probably have no inkling of his or her social network data being accessed.

Combining Data for Political Targeting

High-tech targeting isn't just for selling products anymore. It's now being used to sell candidates and ideas. >>

The widespread and largely unregulated collection, sharing, sale, and storage of massive amounts of consumer data are a threat to all of us.

Sarah Downey, attorney for online privacy products from Allure

many aggregators are just beginning to explore the uses of social networking data.

Data Combination Could Pose New Privacy Threats

What may be a dark side to this mashup of public records and social networking data is this: Public records sites such as Intelius, Spokeo, and PeopleFinders.com distribute the kind of data that landlords, insurers, employers, or creditors could easily use to screen applicants—but the sites insist that their content is not intended for such uses.

"The use of our service to screen potential employees, tenants, or for any other purpose that's restricted by the Fair Credit Reporting Act is in violation of our Terms & Conditions," Intelius's Adler wrote in an email to *PCWorld*.

But many people suspect that personal data offered at public records sites is being used for exactly such purposes. As FTC Commissioner Julie Brill has commented: "I have long been concerned about data that [is] used in place of traditional credit reports to make predictions that become a part of the basis for making determinations regarding a consumer's credit [and] his or her ability to secure



Political campaigns are combining online and offline data to form a detailed picture of prospective voters, and looking for clues that a voter might be swung by a well-targeted ad. Campaigns from both major political parties are hiring political advertising and consulting firms like Aristotle, CampaignGrid, RapLeaf, and TargetedVictory, all of which have amassed personal and political data on millions of people.

This data is gleaned from voting information in the public record—party affiliation, and how often the person has voted over the years.

Firms can combine that offline political data with other offline data such as real estate records, and then com-

“



With the social networking revolution, the expectation of privacy is way down, and the ... expectations of privacy with specific types of data ... are still very much in flux.

Jim Adair, (Member of Senate Intelligence Committee)

bine that with a subject's online activities, such as social network profiles, online shopping histories, contributions to charities and political causes, and articles read (the types of articles you read say a lot about your political leanings—whether you're pro-guns or pro-choice, say).

Political campaigns will spend more than ever before on advertising in the 2012 elections, according to a report from Borrell Associates, and they will spend far more on online advertising than in the past. Campaigns will spend a total of \$9.8 billion (much of it Super PAC money) in 2012, up from \$7 billion in 2008, and online advertising spending will rise to \$160 million in 2012 from \$22 million in 2008.

Still, online political advertising remains in its infancy. While TV will get 57 cents of each advertising dollar spent on 2012 campaigns, online advertising will get only 1.4 cents, the Borrell Associates report says.

Online Advertising 3.0

The online advertising business is powered by personal information. In fact, the industry is being defined by an arms race to develop both new ways to collect more (and more accurate) personal data and better methods to track and analyze people's online choices and behaviors.

Virtually every player in the Web advertising business is sitting on a big database of personal data. Those databases contain the demographic, preference, and social data of

millions and millions of Web consumers, and those databases are growing larger and larger all the time. Those databases have also become hyperconnected; that is, various players in the ad delivery chain can share the personal data in those databases in just milliseconds.

In the Web's early days, advertisers were content to place ads in front of people they knew little about in hopes that two or three in 100 would click on them. That “blind” ad-serving model is giving way to “smart” ad serving, where advertisers and their agencies work with intermediaries, and a lot of targeting data, to place ads in front of users likely to click on them.

They judge that likelihood by identifying a person visiting a website, and then evaluating the person's profile in a database, which might contain the person's browsing history, online buying habits, demographics, and even the likes and dislikes of their Facebook friends. After the target prospect has been identified, advertisers want to use the data in an effort to serve up a highly personalized ad to the target.

In short, advertisers are moving away from buying clicks, and toward buying “audiences,” instead. The audiences are defined by commonalities in their personal data, gathered from many different sources, both online and off.

“[A]n arms race [is] going on in the data economy right now,”

”

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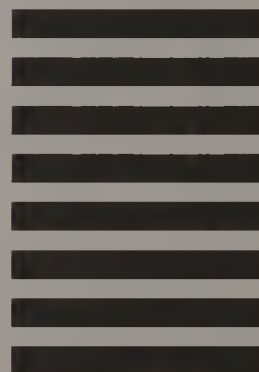
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says Shane Green, CEO of Personal.com, which offers a personal data management tool for consumers. "Everybody is working hard to find differentiated data, and differentiated analytics."

The quality and variety of what's in those databases makes all the difference in the success of an advertising campaign. "The companies that are able to use their data to best identify and serve ads to site visitors in real time will win," one advertising executive who chose to remain anonymous told me.

Real-Time Ad Targeting

Here is a radically simplified explanation of how an advertiser would place an advertisement on a website today:

When someone visits a website, that site has an opportunity to deliver a targeted ad on behalf of one or more of its advertisers. To do this in real time, the website posts the availability of an advertising opportunity on an "exchange"—a Web-based open market where advertisers can bid to deliver targeted ads.

But before the advertiser buys the opportunity to show its ad, it wants to know a lot more about the person who will view it. So it looks for a small bit of identifying code (an HTML cookie) that it has installed on the visitor's computer in the past. The advertiser then determines whether the cookie ID matches an audience profile in either its own database or that of one of its technology partners.

The profile databases within which the advertiser looks can contain information from hundreds of sources of offline and online data, and can be augmented with information bought from large data brokers such as Acxiom or Experian, or from specialty data brokers like 33Across and Media6Degrees, which sell profiles based on people's social networking data.

If the advertiser finds a match, it then determines how much to pay for the impression based on factors that may include demographics, time of day, or even how recently the visitor last saw one of its ads.

The advertiser might then work

with another technology partner to adjust the content of the ad (anything from the messaging to the color of the product) to match the likely interests and tastes of the site visitor.

All of this happens in milliseconds.

Fingerprinting Tech: Data Aggregators' BFF

Using cookies to recognize people online and sync up data about them isn't ideal, however. A cookie associated with a particular IP address might contain the browsing histories of multiple people in the household who use that PC. And cookies may not last very long in the browser: Security software is often set to delete cookies once a week. People in the online advertising industry call such deletions "cookie erosion."

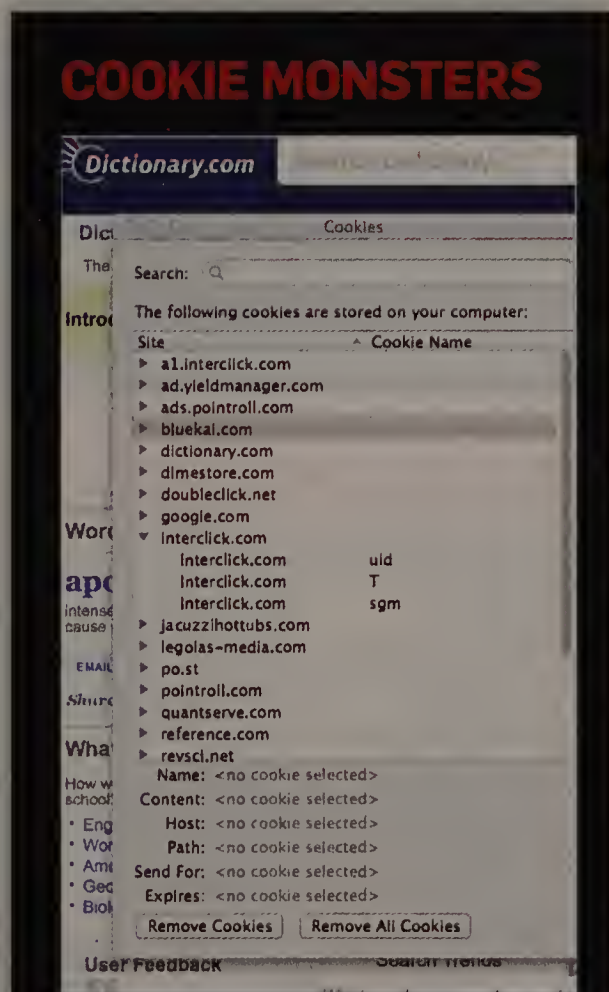
Naturally, companies are springing up with technologies

that resolve these issues. New "fingerprinting" technologies rely on some highly sophisticated means to verify that the personal data collected at different sites at different times, and for different reasons, are all from the same consumer.

BlueCava, based in Irvine, California, has developed a "device ID" technology that identifies site visitors based on the unique combination of settings in their Web browser. The company then buys demographics, preference, and Web tracking data from site publishers all over the Web, and matches and adds that data to the identified users' profiles in its database. It can then sell all that profile data to advertisers and marketers. BlueCava CEO David Norris says that his company's technology can identify devices with 99.7 percent accuracy, and that it has already identified roughly 10 percent of the 10 billion Internet-connected devices in the world.

Fingerprinting Challenges Anonymity Online

Fingerprinting technologies like BlueCava's give some in the privacy community serious pause. "I think device ID is really unethical," says Kaliya Hamlin of the Personal Data Ecosystem Consortium. "It's one thing to put cookies in your >>



Take a dive into your browser's Settings menu, and you may soon discover how liberally some websites distribute their cookies on the computers of site visitors. Dictionary.com, for instance, dropped 55 cookies in our test browser after just one visit to that free site. Placing the cookies were Dictionary.com itself and a number of the site's ad network and data provider partners, including DoubleClick, Google, and Yahoo.

browser, because you can throw them out; but a device ID is permanent, and takes away your means of defining context in your digital life."

Hamlin believes that device ID degrades privacy by taking away our ability to use alternate identities online to keep assorted aspects of our digital lives separate.

In the physical world, Hamlin points out, we can use physical distance and time to separate the various contexts in which we operate. We can get in the car and drive to our kids' school for a teacher conference, then drive across town to an AA meeting, and maybe participate in a hobby on the weekends. The info we give out in each of these contexts stays separate because we give it to different people at different places at different times.

But online, Hamlin notes, those firewalls just don't exist. Instead, to stay anonymous, people rely on various nicknames and avatars at the

sites they frequent. But device ID defeats this practice. Device ID concerns itself with the device and the browser people use to access websites, not the identities they set up there. It ties all those identities together into one big profile.

"Device ID is almost like the police putting GPS trackers on cars, which the Supreme Court just ruled illegal [in *United States v. Jones*]," Hamlin says. The one difference is that a driver can remove a GPS tracker, but a device ID is established far away, so a computer user can't easily remove it.

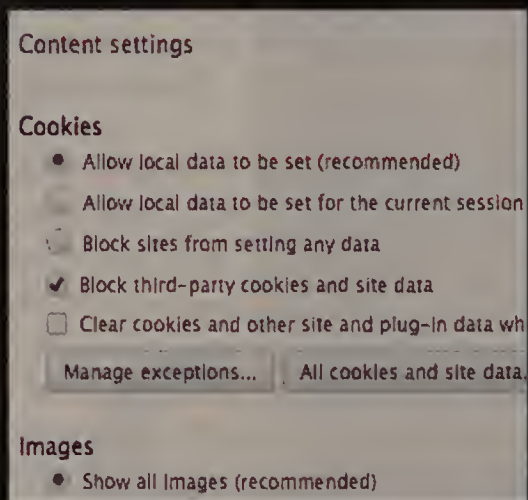
BlueCava's Norris counters that his company will remove a device ID from its system if a consumer requests it at the company's website (go to bluecava.com/preferences). Norris says that this accommodation is more privacy-promoting than Do Not Track for cookies, because, he says, Do Not Track cookies can easily be deleted in the browser (by the user or by antivirus software), but the deletion of a device ID is permanent.

The problem, however, is that most people will never even know that a device ID exists for them.

'Big Data' Analysis Infers a Lot From a Little

So-called Big Data is one of the few big concepts that will define technology and culture in the first part of the 21st century. The term refers to the capture, storage, and analysis of large amounts of data. This can mean any kind of data, but

BAD, GOOD COOKIES



Some browsers, such as Google's Chrome, allow a user to block third-party cookies, which track the user's movements around the Web, while permitting (generally useful) "first-party" cookies that remember user settings and content choices for just one site. This "local data" helps to tailor-fit content to the user in future site visits.

the term often refers to the collection and analysis of personal data.

Running deep analysis of terabytes of data was perhaps pioneered by Google, but Big Data practices are now in place at all kinds of organizations, from law enforcement to dating sites to UPS to Major League Baseball. IDC (owned by the same parent company as *PCWorld*) says that the \$3.2 billion that companies spent on Big Data in 2010 will grow to \$16.9 billion in 2015.

Among people involved in the personal data economy in one way or another, one anecdote comes up over and over again, and beautifully demonstrates both the possibilities and the dangers of Big Data.

A story by Charles Duhigg in the *New York Times Magazine* in February described how analysts in the predictive data department of Target developed a way to use the company's customer data to predict the pregnancies (and future baby prod-

uct needs) of its female customers, sometimes even before the woman's family knew she was pregnant.

This was an extremely important discovery for Target because it allowed the company to show the women ads for various baby products timed to each phase of the pregnancy. There was an even bigger bonus. During the stressful months of pregnancy, future moms' and dads' normal buying habits frequently go out the window, and they look for the most convenient place to buy everything. If Target could get the women into its stores to buy baby products, it might become their go-to source for all sorts of products.

The Target analysts got their breakthrough by looking at the buying histories of women who had signed up for new baby registries at Target. The analysts noticed that pregnant women often bought large amounts of unscented lotion around the start of their second trimester, and that sometime during the first 20 weeks of their pregnancies they bought lots of supplements like calcium, magnesium, and zinc.

The analysts then searched for these same "markers" in all females of childbearing age, found the likely moms-to-be, and sent them offers and coupons for baby products carefully timed to the various stages of pregnancy. Ka-ching.

This is a relatively simple example, and one that happened to be reported in the media. But, as the Duhigg article points

out, most large companies in America now have "predictive analysis" departments and are learning to look for the kind of markers that Target discovered hidden in its data.

Big Data Puts Privacy in a New Light

In the Target case, future parents were served with highly relevant ads and offers, and the retailer found a new way to reach its customers and pump up sales. No problem, right?

Wrong, say privacy advocates. The warehousing and analysis of so much data, and so many types of data, might lead the curators of the databases to infer things about us that we never intended to share with anybody. The data might even predict our future behaviors—what even we don't yet know that we're going to do.

The "predictive analysis" of Big Data is often called "inductive analysis" in academic and research circles because it induces large meanings from small sets of facts or markers.

"Inductive analysis concerns itself with singular things that can seem to be innocuous, but that when combined with other innocuous data points—like your favorite soda—can create meaningful predictors of behaviors," says Solon Barocas, a New York University graduate student who is working on a dissertation about inductive analysis.

Target, for instance, didn't even need to know the names of the women it ended up sending pregnancy ads to. It simply delivered a target ad to a group of addresses with the right demographics and a common pattern of past purchases. A process so totally cold and machinelike being used to predict something so human, so personal, like pregnancy, is creepy.

In the next ten years, marketers and advertisers will spend more and more on Big Data science, focusing on finding analysts who can discern patterns in large pools of data. Big Data analysis positions are the new hot jobs, and the people who will fill them are a new breed, with new skills. "These people need traditional statistics and computer-science backgrounds, but also some coding and basic hacking skills," Barocas says.

Big Data analysts don't just help target ads for products. >>

There is an arms race going on in the data economy right now. Everybody is working hard to find differentiated data, and differentiated analytics.

Shane Green, CEO of Personal Home



A political campaign might do a survey of 10,000 people to learn about their demographics and political choices. It might buy more data about those people from one of the large data sellers, like Acxiom or Experian, then search for unique markers in the data that would predict future political leanings.

But those predictors may bear no obvious relation to what they predict, Barocas says. "For instance, the analysts might find that something odd—like what fashion-magazine subscription people hold—is a strong predictor of the kind of candidate they're likely to vote for."

In future elections and ballot initiatives, billions will be spent on making inferences about voters, and about the issues, candidates, and political ad content that they might be sympathetic to. The campaign with the best personal data and the best analysts may win. That seems like a very

undemocratic way to choose our policies and leaders.

Experts say that in the future, predictive analysis will advance to the point where it can tease out information about people's lives and preferences using far more,



We're saying there's a tremendous opportunity for businesses to tap into all that data by doing it in a way that involves and empowers the consumer.

Katelya Handlin, Former Data Analyst, Amazon

and far more subtle, data points than were used in the Target case. The inductive models that some companies already use are huge, containing up to 10,000 different variables—each with an assigned weight based on its ability to predict.

But Big Data analysis may have a built-in public relations problem, because its way of predicting human behavior seems to have little to do with human behavior. Unlike traditional analysis, which seeks to predict future preferences or behaviors based on past ones, the field's inductive analysis concerns itself only with patterns in the numbers.

After Target "targeted" baby ads at women it thought were pregnant, the women and their families criticized the company's tactics. They were creeped out by the ads because Target's inference about them could not be mapped to any piece of data that they had already provided. Even though Target was correct in its inferences, it was simply not intuitive that the purchase of cotton balls and lotion would predict that the buyer was pregnant and would soon be buying diapers.

More than anything else, this new, mathematical method of

analysis may force us to look at our privacy and the way we manage our personal data in a whole new light. After all, it's unsettling to know that hundreds of unrelated bits of our data can be pulled together from a hundred different sources (perhaps verified by fingerprinting technology like BlueCava's) and analyzed to reveal numeric patterns in our behavior and preferences.

"Even the smallest, most trivial piece of information might be strung together with other pieces of information in a pattern that is sufficient enough to infer something about you, and that's a challenging world to live in because it upsets our basic intuitions about discretion," Barocas says.

Transparency, Inclusion Might Help Everyone

When Target realized its baby-products ads were getting a negative response, it didn't pull the ads; instead, it elected to hide them among unrelated and less-targeted ads when

showing them to pregnant women. Rather than asking female customers if they were interested in special offers for baby products, the company chose to infer the answer in secret.

And that lack of transparency may be the single biggest objection to consumer tracking and targeting today. Advertisers are spending millions to combine, transmit, and analyze personal data to help them infer things about consumers that they would not ask directly. Their practices with regard to personal data remain hidden, and they're acceptable only because people don't know about them.

Such tracking and targeting also feels arrogant. Consumers may not mind being marketed to, but they don't want to be treated as if they were faceless numbers to be manipulated by uncaring marketers. Even the term "targeting" betrays a not-so-friendly attitude toward consumers.

Ironically, advertisers might be far more successful if they pulled back the curtain and included consumers in the process. It's well known that the personal data in the databases of marketers and advertisers is far from completely accurate.

Maybe, as several people I talked to for this story pointed out, the best way to collect accurate data about consumers is to just ask them. And if an advertiser is hesitant to ask for a certain piece of personal data, the advertiser shouldn't infer it.

"What our organization is trying to work out is whether or not there's a way to [collect personal data] where the user knows what's happening and companies [get] their data not by stalking [users] but by asking them," says the Personal Data Ecosystem Consortium's Hamlin.

It might sound something like this, Hamlin says: "You tell us your income and your age and some of your interests, and we promise to use this information to present you with relevant content, [such as] an ad that matches your interests."

Internet Needs to Grow Up

Still, many people—on both the privacy and advertising sides of the fence—believe there is room for both consumer privacy and for Web advertisements and content targeting using personal data. But the veil of secrecy around the use of personal data would have to be lifted.

For that to happen, many believe,

everybody in the personal data economy must be more realistic about the economics of the Internet. Advertising, in one form or another, pays the bill for all things free online. Everything that website publishers, content creators, and app developers give away online is paid for with advertising—advertising targeted using consumers' personal data.

Consumers are complicit in the growth of the personal data economy because we have come to expect lots of free services online. From the Internet's earliest days, we've always expected a level of anonymity—but the more free services we use, the more personal data we must give away, and the less privacy and control over our data we have. It's up to us to find our own comfort zone between those two ideals, but we need information and transparency to make that choice.

The online advertising industry needs to become much more transparent about the ways it collects and uses our personal data. If it did so, we might be more inclined to believe its claim that carefully targeted ads actually help us by making Web content more relevant and less spammy.

If a website publisher or social network is offering a "free" service in exchange for the user's personal data, the site should be very clear about that exchange. The online adver-

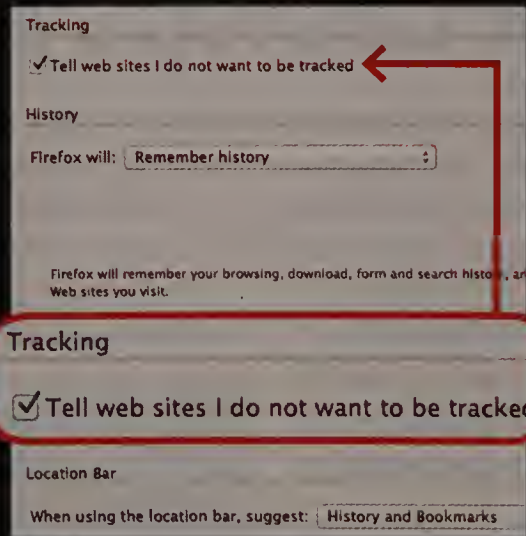
tising industry should give people options—a choice between "free and tracked" or "paid and not tracked," for instance. That idea is nothing new; it's very similar to the free, ad-based services that also offer an ad-free premium service.

It's not a zero-sum game, where either privacy or targeting wins outright. Advertisers won't stop using personal data to target ads. And few consumers will quit using Facebook or other sites that collect personal data after they read this article. We can't expect complete privacy and anonymity online, but advertisers and marketers must understand where we expect privacy.

The challenge now is for everyone involved—consumers, advertisers, Internet companies, and regulators—to understand how the personal data economy really works.

Only then can we start getting busy developing some rules of the road that balance the business needs of advertisers with the privacy needs of consumers. ●

WILL THEY STOP?



Tracking
☒ Tell web sites I do not want to be tracked

History
Firefox will: Remember history

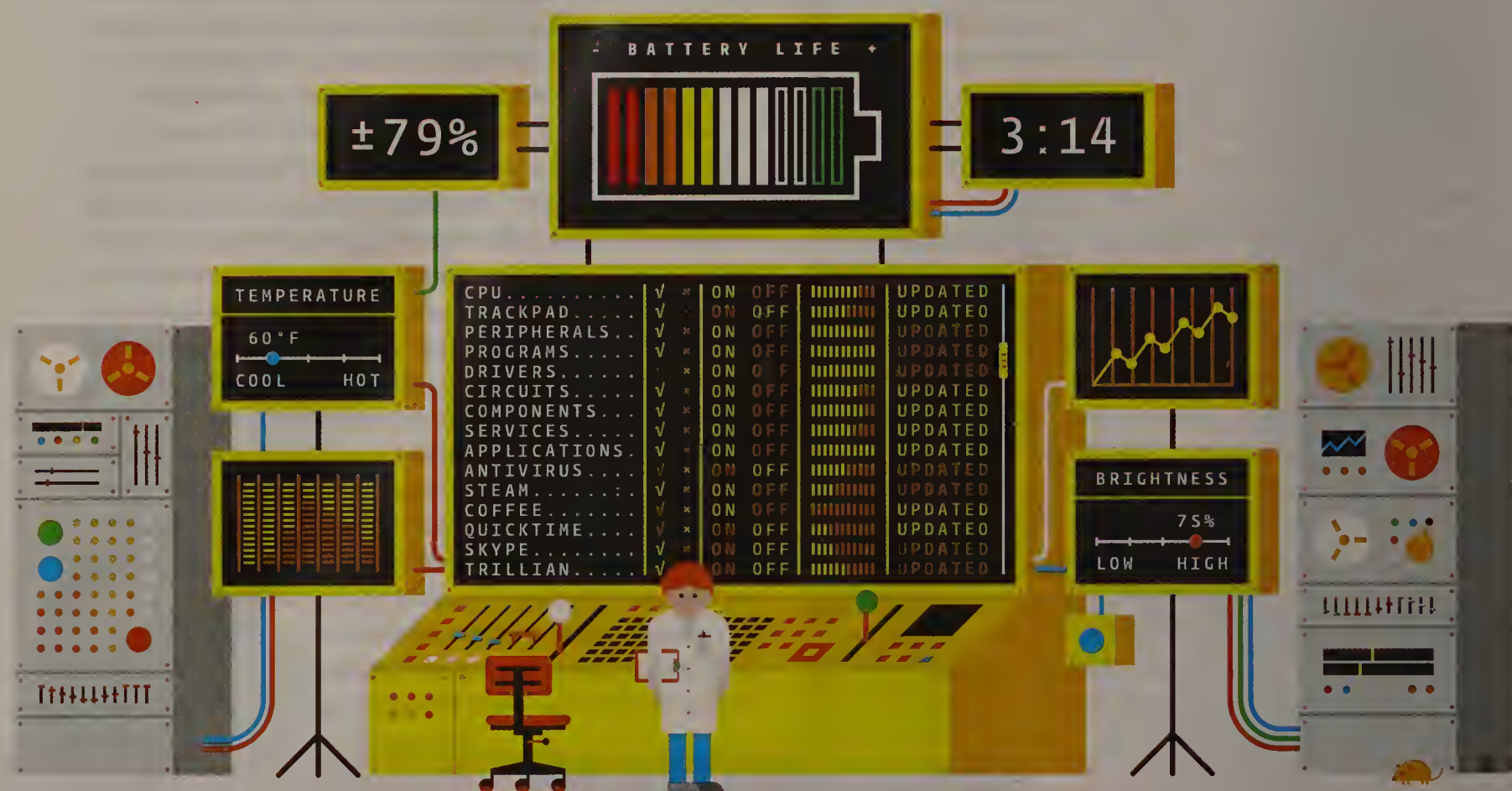
Firefox will remember your browsing, download, form and search history, and Web sites you visit.

Tracking
☒ Tell web sites I do not want to be tracked

Location Bar
When using the location bar, suggest: History and Bookmarks

Browsers like Firefox 11 and Internet Explorer 9 and 10 allow you to tell websites (via an HTML message sent to the Web server) that you don't want to be tracked. Unfortunately, not all websites and online advertisers have committed to honoring this message. And many sites merely stop serving targeted ads to the browsers of users who send a "do not track" request, but continue to collect the user's personal data.

Here's How



Improve Your Laptop's Battery Life

BY MARCO CHIAPPETTA

THOUGH LAPTOP manufacturers have made great strides over the past few years in increasing the efficiency (and thus the battery life) of their products, even the most efficient new models don't last long enough for many users. You may not realize, however, that your portable system is probably loaded with integrated peripherals and bloatware that you'll never use but that still consume resources and reduce battery life.

Here, we'll look at ways to improve that situation. Some of the steps may require venturing into the BIOS or

Everyone who owns a laptop wants to maximize the time between battery recharges. Here's how to achieve that goal with a few basic hardware and software tweaks.

UEFI (Unified Extensible Firmware Interface) of your notebook, while others are simpler software tweaks.

Know What Kills Your Battery

Before diving in, let's review why notebook batteries die in the first place. From the CPU to the touchpad, every component in a laptop consumes power. The amount consumed varies from component to component and also fluctuates in response to environmental conditions

such as temperature and system workload. But the greater the number of components or peripherals that are attached to your laptop, and the more work you do with it, the quicker the battery will drain.

Every program, driver, or service that loads, every background task that runs, and every electronic circuit that fires up saps a tiny bit of battery life. Consequently, reducing the number of attached or active peripherals and otherwise minimizing

the load on the notebook will prolong its battery life.

Unfortunately, some of the burdens that the manufacturer or vendor places by default on your laptop's battery may not be easy to track down and eliminate, meaning some effort on your part.

Try These Quick Fixes

PCWorld.com has other articles on extending laptop battery life (see, for example, find.pcworld.com/73017), and we won't cover the same ground here. Keeping your laptop cool, dimming its display, and enabling system hibernation are all good ways to prolong battery life; but in this guide we'll focus

on hard numbers that illustrate the potential benefits of certain modifications.

Tweak Your Hardware and Software

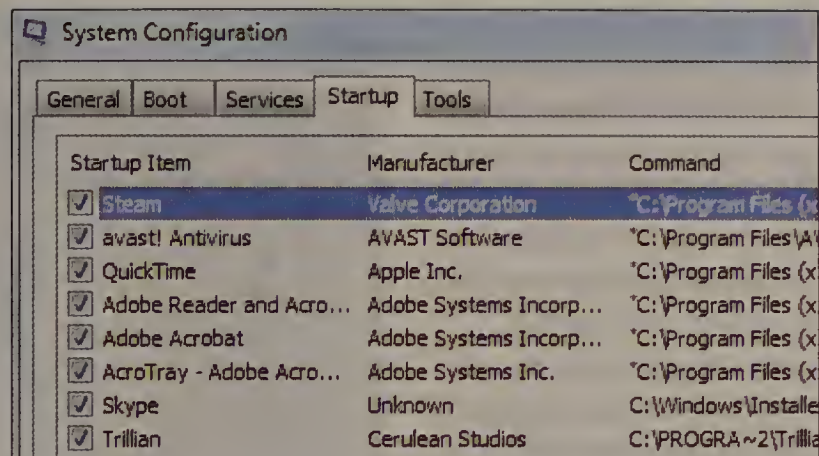
A number of hardware and software changes can prolong battery life. However, some tricks might cause your laptop to function poorly or even stop working entirely, so please be careful. Though I tested all of the tweaks suggested here on my own laptop, *PCWorld* can't guarantee that they'll work with your particular hardware. Before making changes, create a backup.

On the hardware side, disabling or disconnecting unused components and peripherals will go a long way toward improving battery life. On the software side, disabling or uninstalling unnecessary (but resource-hungry) services and applications will help minimize power consumption. In addition, updating drivers—the video drivers in particular—sometimes helps by enabling

the system to optimize or offload certain processes, such as video encoding and decoding, from the CPU to relatively power-efficient dedicated hardware in the graphics processor.

Since every program or service that loads in Windows consumes system resources, you should disable those you don't need or want. Start by launching the Windows System Configuration utility (aka **MSCONFIG**): Click the *Start* button, type **MSCONFIG** in the Search field, and press **<Enter>**. In the resulting window, clicking the *Startup* tab will show all programs that start with Windows. You'll probably see several programs that you won't mind disabling. My project notebook (an Acer Aspire) listed eight items as automatically starting with Windows: antivirus software, QuickTime, Skype, Steam, Trillian, and three Adobe Acrobat-related items.

Having your most frequently used applications start with Windows can be



Windows' System Configuration utility (MSCONFIG) lets you prevent resource-hogging programs from launching with the OS.

handy, but if they're not vital, it's best to disable automatic startup and start them manually when needed. On my project laptop, I disabled everything but the antivirus software. To disable items in MSCONFIG, simply untick the box next to each program, apply the changes, and restart the system.

You probably also have a handful of Windows Services that you can disable to conserve system resources. To see which services launch automatically on your laptop, click the *Start* button, type **SERVICES.MSC** in the Search field, and press **<Enter>**. The services management utility will open, and you'll see a huge list of installed services.

Choose Carefully

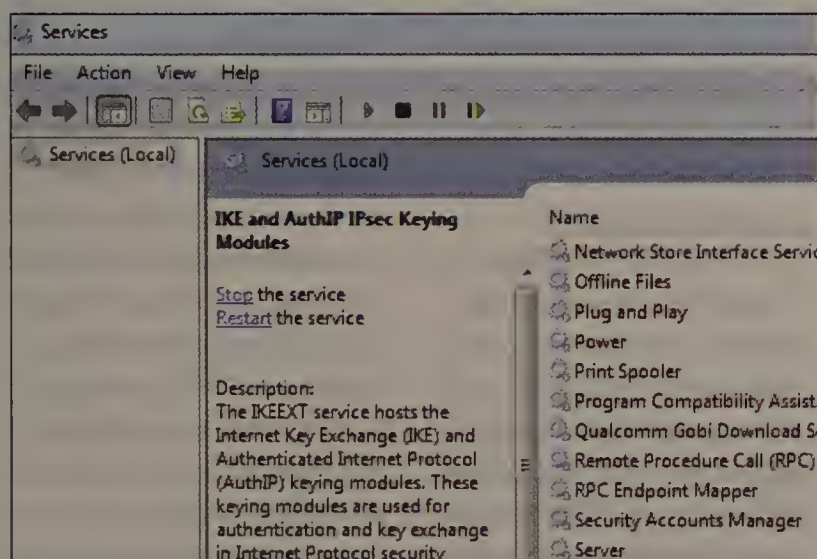
The vast majority of these services are vital to the operation of your OS, and you shouldn't touch them. But scrutinize the list carefully, and you'll undoubtedly find a few that you can safely disable. I recommend going through the list one by one, reading the descriptions

(doing Internet searches for more info if necessary), and disabling only the services that you're absolutely sure you don't need. On my project notebook, services that I found I could safely disable included the tablet PC input service, remote desktop services, the BitLocker drive encryption service, and a Qualcomm Gobi Download Service associated with an integrated 3G modem that I had never used.

Bear in mind that my specific decisions may not apply to your situation; for example, if you use BitLocker or if your laptop converts into a tablet, you'll want to keep the related services enabled.

To disable a service in the service management utility, double-click the service in the list and in the subsequent window that opens, and then change the startup type to *Manual* in the associated drop-down menu.

Disabling unused hardware or integrated peripherals is another great way to conserve system resources and maximize battery life. If your laptop comes with

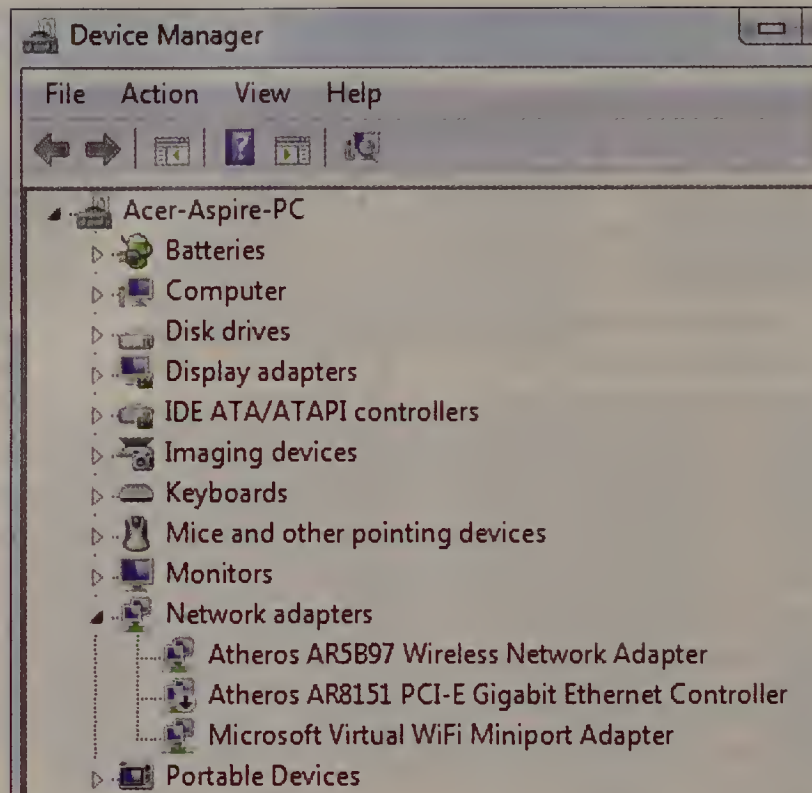


To prevent a service from starting with Windows, double-click the entry for it in this list, and change its startup type to 'Manual'.

integrated Bluetooth or a cellular modem, for example, or even a wired ethernet port that you never use, disabling the hardware will reduce power consumption and prevent the corresponding drivers from loading every time Windows starts.

Sometimes you can disable integrated peripherals in your laptop through the system BIOS or UEFI, or via Device Manager. The preferred method is to use the system BIOS, but many laptops don't provide the necessary options for this route. To see whether your laptop does, power it off, turn it back on, and during the POST sequence (before Windows begins to load) press the necessary key to enter the BIOS or UEFI (it's usually **<Delete>** or **<F2>**). Once you're in the BIOS, navigate to the Integrated Peripherals menu (if it's available) and see whether the piece of hardware you'd like to disable is listed. If it is, select the item and disable it.

If your system BIOS does not provide the mechanisms to disable unused hardware,



If the BIOS or UEFI doesn't let you disable integrated peripherals, right-click them in Windows' Device Manager and then disable them.

you can disable the items via Windows' Device Manager. Note, however, that this approach doesn't power the hardware down; instead, it prevents the hardware's driver from loading with the OS. Though not ideal, this does save memory, as well as preventing the hardware from initializing.

To disable a piece of hardware in Device Manager, click the *Start* button, type

Device Manager in the Search field, and press **<Enter>**. In the resulting Device Manager window, expand the tree to find the appropriate piece of hardware, right-click the item, and choose *Disable* from the menu.

Another quick and easy hardware tweak that can save significant energy is lowering your notebook's screen brightness. I suggest reducing the brightness to the lowest level that is still easy to read and comfortable for your eyes.

Testing the Tweaks

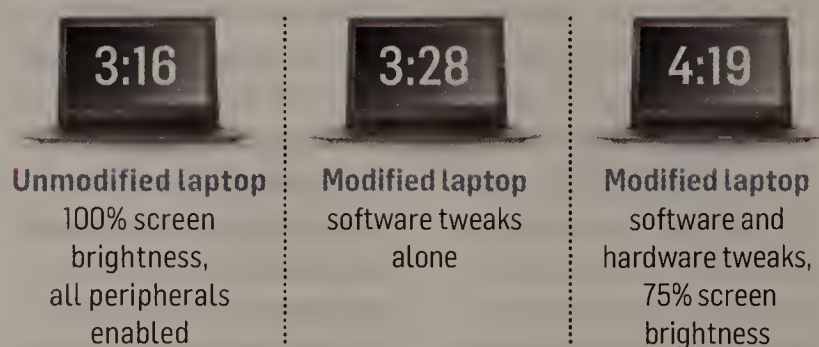
To gauge the improvement in battery life that my test laptop achieved after I implemented the software and hardware modifications described here, I ran Futuremark's PowerMark utility on my Core i3-powered Acer Aspire test laptop before

and after making the tweaks. I tested the laptop in three configurations: unmodified, with maximum screen brightness and all hardware and software enabled; modified with software tweaks to disable unnecessary startup items and services, but with no hardware tweaks; and modified both with software tweaks and with unneeded hardware disabled and the screen brightness lowered to 75 percent.

The results: In its unmodified state, the laptop delivered a respectable 3 hours, 16 minutes of battery life, according to PowerMark. After I performed a few simple software tweaks, the tested battery life rose to 3 hours, 28 minutes. But the biggest gains came after I fully tweaked the notebook and disabled unneeded hardware. With the software- and hardware-related alterations in place, my test laptop's battery life improved by more than an hour, to 4 hours, 19 minutes; that's a battery-life increase of better than 32 percent.

Besides maximizing battery life, correctly performing these system tweaks may increase your laptop's performance. Disabling unnecessary hardware and software also reduces the machine's boot times and frees up its CPU resources and memory, all of which should increase overall system performance and enhance your computing experience. May your laptop live long and prosper!

Stretching Battery Life



Note: Times are listed in hours:minutes.

Learn to Code Online for Free

Looking to acquire a new skill? We have a few tips to help amateur coders get started on creating their own sites and Web apps.

IN DAYS GONE by, all you needed to make a website was a Geocities account and some basic knowledge of HTML. Times have changed, though, and now people build websites using at least one advanced coding language. To build apps and services for the Web, you need to learn one of these languages. (For links to the sites and services noted here, go to find.pcworld.com/73018.)

Choosing a Language

Your first decision is whether to learn front-end or back-end coding.

Front-end coding relates to the appearance of your website. It concentrates on extending the basics established with HTML and CSS so you can customize your site even more.

Back-end coding focuses on the work behind the scenes—server-side tasks such as setting up and manipulating databases that feed into the Web so users can, say, log in to your website or read forum posts. To build a Web app or create the next big social networking site, you'll need to learn some back-end coding.

For that, take a crack at the Ruby programming lan-



Code School provides lighthearted video tutorials and fun coding challenges to help you learn to program.



Codecademy is a great online resource for novice coders.

guage. Ruby is relatively intuitive in its syntax, and it has a lot of powerful built-in tools for Web development. Many of today's most popular sites (including Twitter) were coded in Ruby.

For front-end coding, I suggest JavaScript. It's a little more difficult than Ruby, with a harder syntax and the requirement that you know the basics of HTML and CSS, but it's a powerful tool for dynamically changing the content of your site.

Where to Start

For both JavaScript and Ruby, you can find some great free tutorials online.

JavaScript newbies should check out Codecademy; for learning Ruby, visit Try Ruby. Both sites have a nice interactive tutorial that guides you in the basic syntax and lets you input code in a window that instantly shows you the results when you press the <Enter> key.

Next, take a look at Code School. This service provides

courses on high-level JavaScript (the jQuery library for JavaScript) and Ruby (the Ruby framework Ruby on Rails) that have the same interactive coding window, along with video tutorials.

What's Next

Once you've gotten your feet wet, you'll need some sort of test server to evaluate your coding skills. This step used to take some heavy lifting, but most Web hosting services now have automated systems that make setting up a test server simple.

When you have server access, poke around in your Web host's control panel to see if it offers a tool to let you set up a separate folder to test your coding projects.

You'll also need an FTP (file transfer protocol) utility to upload your programming projects. I suggest downloading the free Cyberduck for Mac OS X and Windows. Linux users can try FileZilla, which is also available for Mac and Windows.

If you're getting serious about your coding, you'll probably want a specialized editor for writing code. Mac users have a lot of great options here, including Coda and TextMate (both very pricey). Windows users can try the free Notepad ++, and Linux loyalists can check out the cross-platform Bluefish.

Learning new skills is always a challenge, but all of these resources will make getting started with coding a little easier. Good luck!

—David Daw

Extend Your Wireless Network

CRAZY4LAPTOPS needs to extend a Wi-Fi network throughout a "rather long house." He asked the Networking forum for advice.

You can extend a connection in several ways.

One approach is to build a better antenna. A parabolic reflector, for instance, will focus the beam in a particular direction (read more at find.pcworld.com/73019).

Wireless repeaters provide another option. These are

basically range extenders.

You position them in the outer range of the router's good signal, and they repeat the signals they receive.

But I most prefer HomePlug technology (homeplug.org). Its standard sends network data over a building's AC power at near-ethernet speeds, and it is the most easily plug-and-play.

I've read about interference problems with ham radios and wireless mice.



But I use such a mouse near a HomePlug adapter, and have not seen any interference.

Your standard HomePlug "starter kit" comes with two devices, each of which plugs directly into an AC wall socket. One goes in the same room as the router, and connects to it via ethernet. The other goes in whatever room you want to establish Internet access for; this device generally comes with one or more ethernet connections.

But Crazy wants to extend Wi-Fi, not ethernet. For that, you can buy HomePlug Wi-Fi

A wireless ethernet repeater from Aztech.

adapters with antennas rather than or in addition to ports. Though not quite as plug-and-play as the ethernet devices—you have to enter your network's name and password—they're not difficult to set up, either.

And yes, several companies make HomePlug wireless startup kits.

—Lincoln Spector

Encrypt Your Email Easily

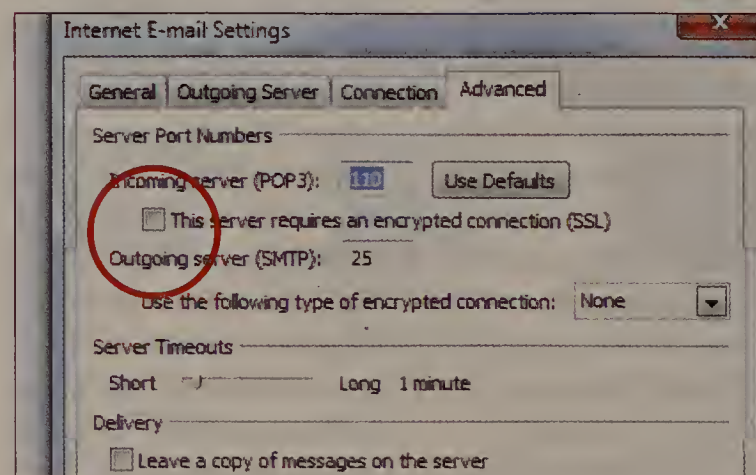
TO SECURE THE connection between your email provider and your computer or other device, you need to set up Secure Socket Layer (SSL) and Transport Layer Security (TLS) encryption—the protection scheme you depend on when checking your bank account or buying online.

If you check your email from a Web browser, make sure that SSL/TLS encryption is active; if it is, the website address, or URL, will begin with *https* instead of *http*.

If you don't see 'https', type an s at the end of 'http' and press <Enter>. Browse your account settings to see if you can activate encryption by default for future logins. If not, check with your provider—it may not support SSL/TLS.

For much more on email encryption (including encryption with desktop clients), go to find.pcworld.com/72924.

—Eric Geier



You can enable encrypted connections in Outlook's settings.

Disable Unwanted Notification Balloons

FEW THINGS ARE more annoying to experienced users than the balloon tips that pop up in the notification area on a freshly installed copy of Windows. Fortunately, they are easy to disable with a quick Registry hack.

Open the Registry Editor, navigate to the *HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced* folder, and highlight *Advanced*. You'll see a number of strings and DWORD values listed in the right Regedit pane. Right-click a blank part of the right pane; choose *New > DWORD Value* from the menu, and name it **EnableBalloonTips**. After creating the new DWORD value, highlight *EnableBalloonTips*, right-click it, choose *Modify* from the menu, and enter a value of 0 (the value will probably be set to 0 automatically). Close Regedit, and restart your PC; the balloon tips should be gone for good!

—Marco Chiappetta

Migrate to an Android Device From BlackBerry

BEFORE YOU BEGIN migrating to your new Android device, let's review the main difference between BlackBerry and Android hardware. All BlackBerry devices have keyboards, but only some models have touchscreens. On Android it's the opposite: Every Android device sports a touchscreen, but fewer and fewer come with keyboards. (For the best smartphones with a full keyboard, see find.pcworld.com/73020.)

Email

First, set up your email accounts on your new Android-based device. Most Android phones come with a friendly home-screen Gmail icon that requires only your username and password.

If you don't already have a Gmail account, make one—you'll

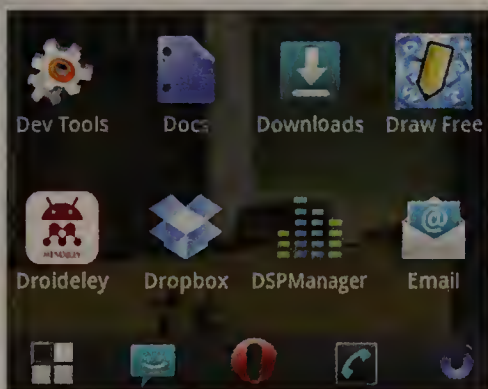
need it to sync your Outlook calendar. You may want to try to persuade your IT department to forward all of your business mail to Gmail automatically.

Otherwise, you'll have to use the alternative email application installed on Android phones. This application may be called 'Email' or 'Mail', but it'll be present; open your App Drawer (the scrolling list of all installed apps), and take a look. You may need some technical

information from your IT folks to configure it for a corporate email server. If your office uses Outlook for mail on the company's desktop PCs, you probably have a Microsoft Exchange server; you can obtain its name by clicking *Help > About* in Outlook and checking under the 'External POP Settings' line.

Contacts

Next, you should import your contacts and calendars. Go to m.google.com/sync on your



The icon for the generic 'Email' app is located in the bottom-right corner of this Android phone's App Drawer.

BlackBerry device's browser; this action will automatically install the software to begin syncing your calendars and contacts with Google's cloud. Once the Google Sync app is installed, open it, input your Gmail account details, review the app settings to ensure that both Contacts and Calendar are checked there, and press *Sync Now*.

Finally, for advice on replacing your BlackBerry apps, see find.pcworld.com/73021.

—Alex Garnett

ANSWER LINE

? How should I clean out my slow-booting Windows PC? —JMDraft

I'M GUESSING that JMDraft's computer has too many *auto-loaders*, programs that load automatically every time the machine boots. This is a common problem. Most PCs leave the factory with too many auto-loaders from preinstalled software, and they gain more



LINCOLN SPECTOR

as users install new programs. I'm referring here to programs that you want and use, but that you don't need to have running constantly.

Which programs should be autoloaders? Just these:

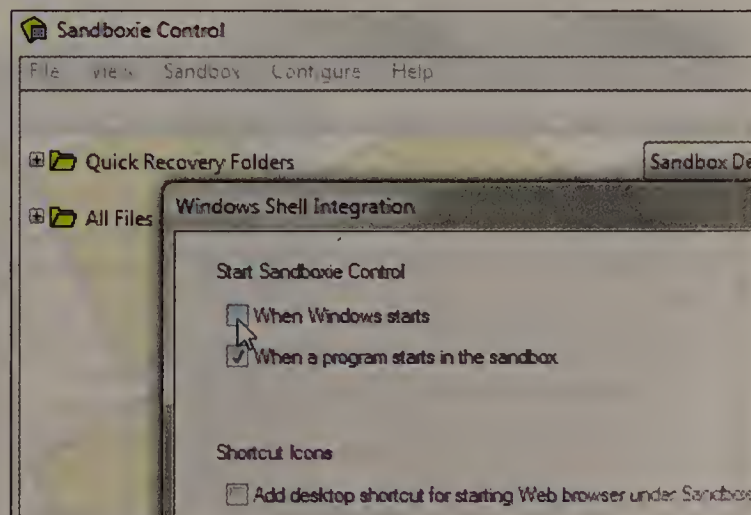
- Your antivirus program and firewall, or security suite
- For a laptop, the battery-monitoring program (maybe)
- Programs that you feel have a legitimate reason to be there all the time (some programs must autoload to work).

First, find the autoloaders: Click *Start*, type *msconfig*, and press *<Enter>*. (If you use XP, click *Start > Run* before typing.) Once the program is up, click the *Startup* tab.

If you can't figure out what one of the autoloaders that appears on the list is, search the Web for its file name.

How do you reduce the amount of autoloading software? Instead of telling Windows not to autoload a program, tell the program itself. Somewhere, it's bound to have a *Setup* or *Options* dialog box or even just a menu.

If no such option seems to be available, uncheck the program in *msconfig*. If it comes back, complain to the vendor and consider switching to a competing program.



Programs usually have a settings dialog box where auto-loading may be checked by default. Uncheck that option.

Make a Portrait Radiant

PUT A ROMANTIC glow in your portraits. Here's how.

Open the photo that you want to tweak in your favorite photo editor. Choose a portrait of a single person in which the overall exposure is about right, and the person fills a lot of the frame.

Here I'll use Corel's PaintShop Pro X4, but you can easily apply the steps to Adobe Photoshop Elements, GIMP, or any editing program that supports layers.

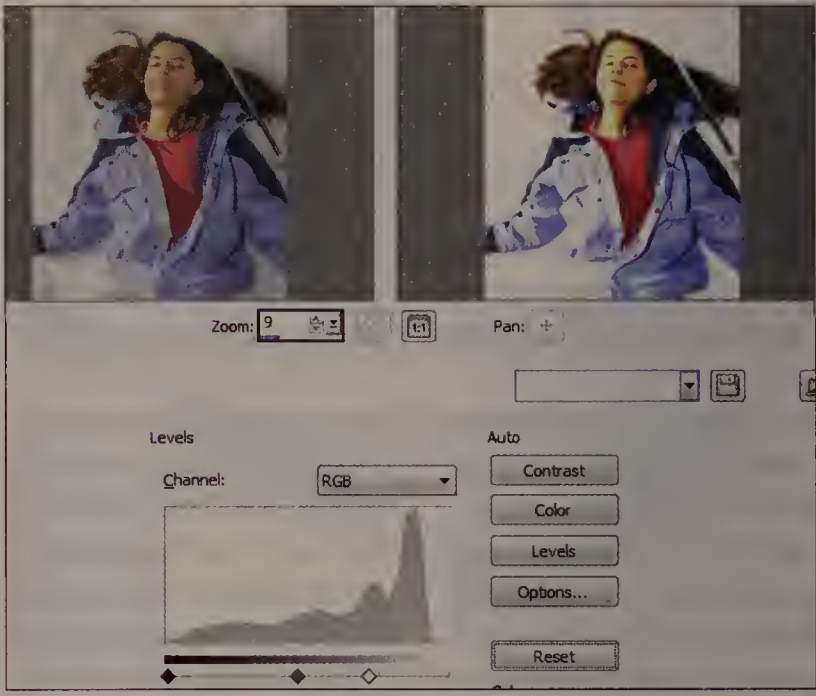
We want to stack two identical copies of the photo, so make a duplicate layer. In PaintShop Pro, choose *Layers > Duplicate*, and then click *OK*. You should see a

second layer appear in the Layers palette on the right side of the screen.

Confirm that the top layer is selected in this palette, and then choose *Adjust > Brightness and Contrast > Levels*. Click *Reset* to wipe out any setting that may be there already. Also, select *Preview on Image*, so you can see the effect that the sliders have on the photo.

Drag the white point (the one on the right) to the left; the image should get brighter. Tweak it until it pops, but before it washes out. When you're satisfied, click *OK*.

One more tweak: Choose *Adjust > Blur > Gaussian*



The image on the right has the radiant glow that we want to add.

Blur, and dial in a radius that leaves you with a fairly blurry image; then click *OK*.

Next, in the Layers palette, change the mode from *Normal* to *Screen*. Finally, grab

the opacity slider; reduce the "radioactive" effect that you see until it shifts from "difficult to look at" to "pleasantly romantic"—as you define it.

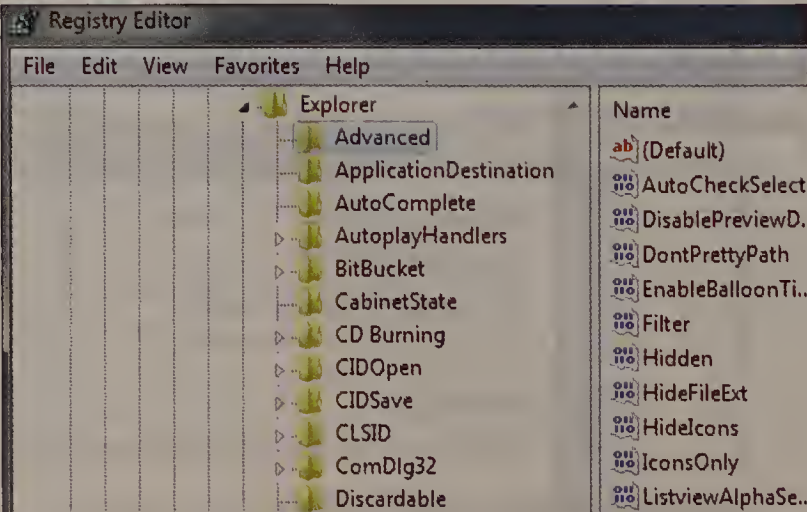
—Dave Johnson

EASY HACK: ADD A 'TAKE OWNERSHIP' OPTION

WHAT SHOULD YOU do if you can't access a file, despite being logged in as an administrator? Taking ownership of the file or directory would help you gain access to it, and some strategic Registry editing can put such ownership a mere right-click away, by adding the option to the Context Menu.

First, select and copy all of the text listed below (you can accomplish this task easily by going to find.pcworld.com/73023):

Windows Registry Editor Version 5.00



A Registry hack can add a 'Take Ownership' option for file access.

```
[HKEY_CLASSES_ROOT\*\shell\runas]
@="Take Ownership"
"NoWorkingDirectory"=""
[HKEY_CLASSES_ROOT\*\shell\runas\command]
@="cmd.exe /c takeown /f \"%1\" && icaccls \"%1\" /grant administrators:F"
"IsolatedCommand"
="cmd.exe /c takeown /f \"%1\" && icaccls \"%1\" /grant administrators:F"
[HKEY_CLASSES_ROOT\Directory\shell\runas]
@="Take Ownership"
"NoWorkingDirectory"=""
[HKEY_CLASSES_ROOT\Directory\shell\runas\command]
@="cmd.exe /c takeown /f \"%1\" /r /d y && icaccls \"%1\" /grant administrators:F /t"
"IsolatedCommand"="cmd.exe /c takeown /f \"%1\" /r /d y && icaccls \"%1\" /grant administrators:F /t"
```

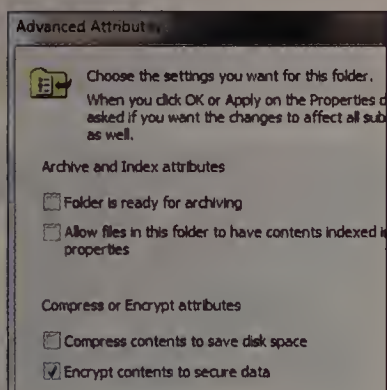
Paste the text into a new Notepad document, and save it with a *.reg extension. Double-click the file, follow the prompts, and add all the keys to the Registry. Now you can right-click a file or folder and choose 'Take Ownership' from the Context Menu.

—Marco Chiappetta

Encrypt Stored Email

MAKE SURE THAT stored email data on your mobile device is encrypted so that thieves and snoops can't access your saved messages if the device is lost or stolen.

It's best to fully encrypt your laptop or mobile device (see find.pcworld.com/72926). For smartphones, use an operating system that provides full device encryption by setting a PIN or password



Click 'Advanced', and select *Encrypt contents to secure data*.

to protect your email and other content files. BlackBerry and iOS devices have offered such encryption for years; Android supports it only in version 3.0 and later.

For desktops and laptops, you can encrypt just your email data files if you prefer not to encrypt the whole PC. The encryption features of email clients vary, so check the documentation for your program and version.

Find more information on how to encrypt your email at find.pcworld.com/72924.

—Eric Geier

HASSLE-FREE PC

Stream Media From PC to Roku to TV

Your Roku set-top box needs some help to stream media from your PC to your TV. Plus: Quickly filter Netflix's Watch Instantly options.

MY ROKU SET-TOP box (roku.com) delivers everything I could possibly want to my TV—but it can't stream my personal library of music, photos, and videos. Not without a little help, anyway.

Plex is a free application for streaming media from your PC to your Roku box. It works like a charm, though it can be somewhat tricky to set up. Here's how to get started with Plex:

1. Add the Plex channel to your Roku account.
2. Download and install the Plex Media Server utility for Windows (go to find.pcworld.com/73022 for the download). This is the software that will link your media library to your Roku box.
3. Right-click the *Plex Media Server* icon in your System Tray; then choose *Media Manager*. That should open a new tab in your browser, which is where you'll set up the media you want to share with your Roku. It may take a minute or two before options appear, so be patient.
4. Eventually you'll see five options for adding media to your library. The process is the same for all of them, so click one (say, *Photos*); then click *Add* and navigate to the folder containing the photos you want to make streamable. To include other folders, click *Add* again.
5. When you have finished making your selections, click *Add Section*. Here again, you may find that it takes a minute or two for the media you've selected to appear in the browser tab.
6. Head to your TV, fire up the Roku, choose the Plex channel, and browse as you like.

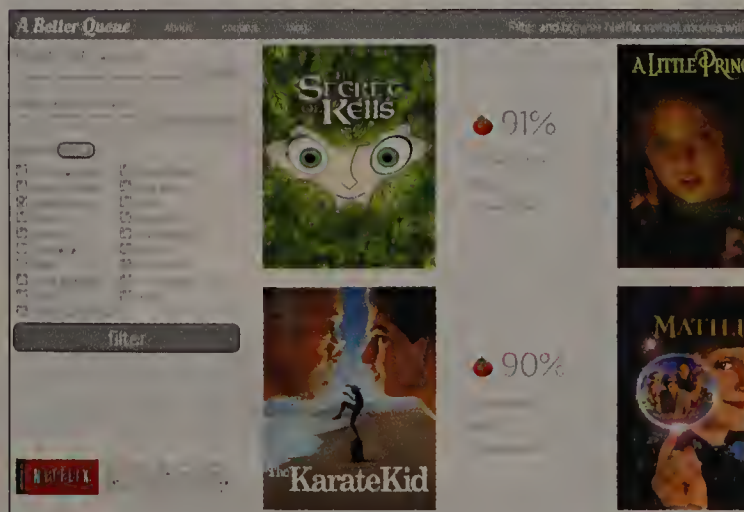


RICK BROIDA

Find the Best Netflix Streaming Movies With 'A Better Queue'

Netflix is actually a little weak in the recommendations department. Suppose, for example, that you're trying to find something fun for the whole family to watch. By clicking your way to Netflix's Watch Instantly section, you can head to the Children & Family section, and then filter the choices by one of a handful of categories: age, "animal tales," Disney, and so on.

But what if you want to narrow the selection to movies that received an especially good rating and that were released within a particular range of years? That's where A Better Queue (abetterqueue.com) comes in. This site provides helpful filtering options for browsing Netflix's Watch Instantly library. First, choose one or more movie genres (out of 19 in all).



A Better Queue provides filtering options for Netflix movies.

Then, using simple sliders, choose a range of years (from 1975 on) and a minimum Rotten Tomatoes rating. (That site aggregates movie reviews.)

Say you're looking for family movies made before 2005 that have a Rotten Tomatoes score of at least 80 percent. Presto: A Better Queue shows you everything Netflix has to offer. Click any result, and you're transported to that movie's page on Netflix proper. 🍿

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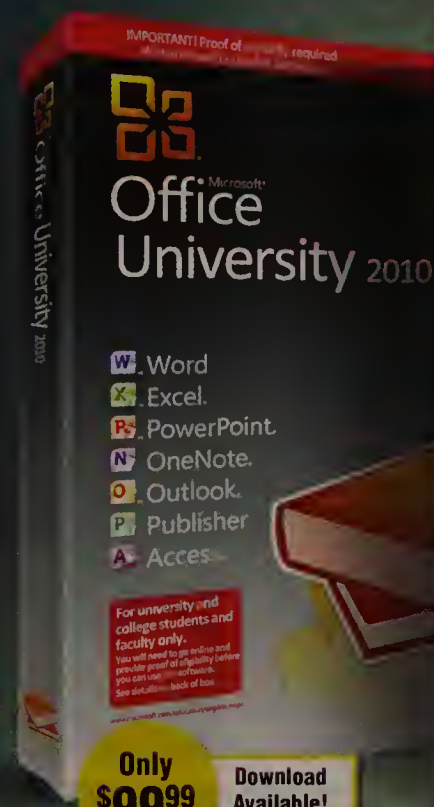
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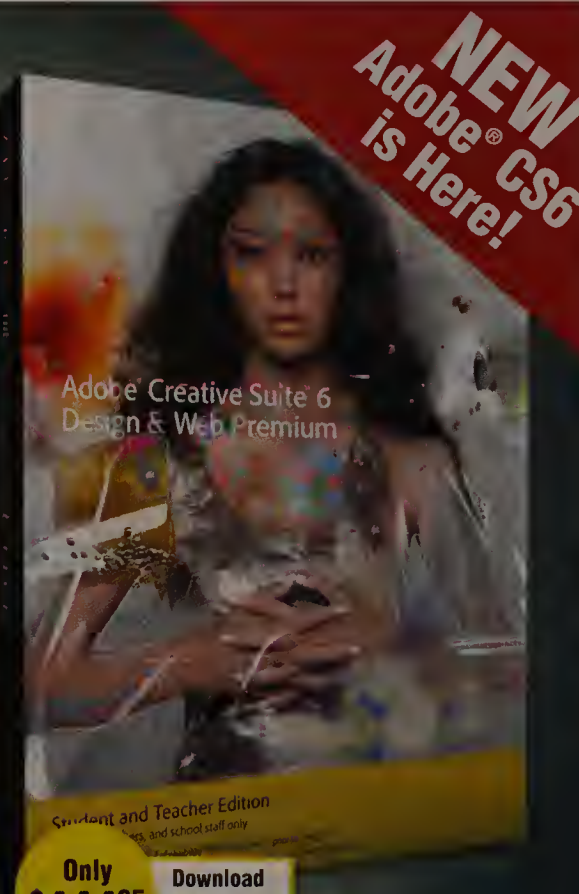
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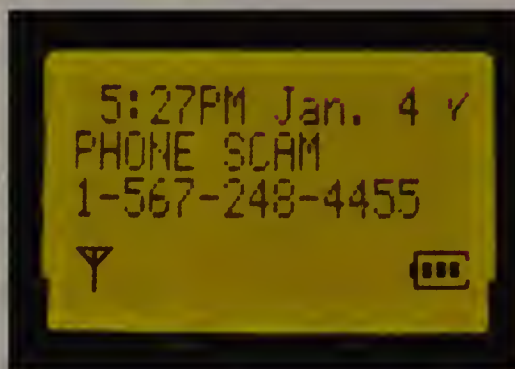
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The Back Page

FROM OUR READERS

Truth in Advertising

WE'VE GROWN ACCUSTOMED to having our lives disrupted by robo-calls pitching dubious goods or services. But Dave and Keri Schwartz of Vancouver, Washington, were not tempted to answer the phone recently when caller ID identified the incoming call as a "phone scam." Instead, Keri grabbed her camera and snapped the shot at right. "If only all scams were so easy to spot," laments Dave.



PLUGGED IN

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→ Sharp to sell 80-inch LCD TV for \$12,000 in Japan. Buyers should install set, and then build house around it.

→ Facebook disruptions in early June slowed the entire Net. On the plus side, we bet worker productivity shot up.

→ USB fuel cell from Lilliputian Systems promises a two-week charge for smartphones. That beats the too-weak charge most of them get now.

→ Disney scientists developing Touché, a technology that can turn almost anything into a touch device. That's scary if you have a pet porcupine.

→ Via announces a \$49 PC with Android. But we hear the cardboard for the case is extra, and you have to catch your own hamster. ●

—Steve Fox and Steven Gray

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AT 33"-WIDE THIS LG REFRIGERATOR MAY BE SMALLER IN WIDTH THAN OUR OTHER FRENCH DOOR REFRIGERATORS BUT IT'S

SEARCHING FOR A network Blu-ray Disc player on LG's site, Joseph Vandepopuliere of Columbia, Missouri, stumbled

upon this intriguing product description. I don't know about you, but here at *The Back Page*, we applaud any optical-disc player that also dispenses water and ice.

Nothing to See Here

DENVER'S GREGG RIPPEY doesn't recall exactly what piece of software generated this dialog box on his Windows 7 PC. But its appearance set him wondering: "If I chose not

to be shown this message again, would that make sense if I had never been shown it to begin with?" He adds, "It all started feeling very existential."

Don't show me this message again

OK

Have an idea for The Back Page? Send your suggestions to TheBackPage@pcworld.com.

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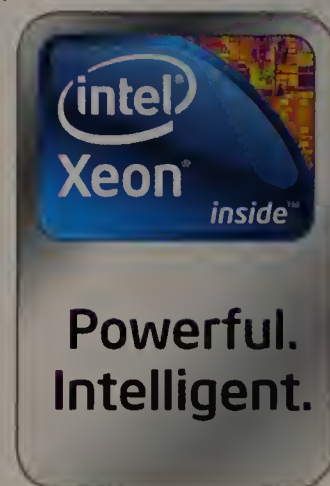
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